

General Narrative.....	1
Chain of Custody	4
Cooler Receipt Checklist	13
Data Review Qualifier Flag Definition Sheet	15
LC/MS/MS Perchlorate Analysis	18
Sample Data Summary	23
Quality Control Summary	30
Sample Data	69
Standards Data	88
Quality Control Data	145
Miscellaneous Data	158

GENERAL NARRATIVE

**CASE NARRATIVE
For
Accutest Laboratories
Former Camp Butner
Work Order 118884**

August 24, 2004

Laboratory Identification:

General Engineering Laboratories, LLC

Mailing Address:

P.O. Box 30712
Charleston, South Carolina 29417

Express Mail Delivery and Shipping Address:

2040 Savage Road
Charleston, South Carolina 29407

Telephone Number:

(843) 556-8171 x 4281

Summary:

Samples from Accutest Laboratories arrived at General Engineering Laboratories, LLC, (GEL) in Charleston, South Carolina on August 11, 2004 for Perchlorates by LCMSMS. The sample containers were delivered with chain of custody documentation and signatures. The sample containers were received intact and within temperature specification, and arrived without any visible signs of tampering or breakage.

The laboratory received the following samples:

<u>Laboratory Identification</u>	<u>Sample Description</u>
118884001	RW0804-658-LakeviewDr
118884002	RW0804-653-LakeviewDr
118884003	RW0804-652-LakeviewDr
118884004	RWB0804-3536-FletchersWay
118884005	RW0804-NCNG
118884006	RW0804-FieldDup1

Case Narrative:

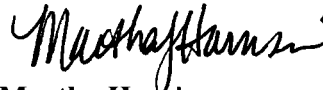
Sample analyses were conducted using methodology as outlined in General Engineering Laboratories Standard Operating Procedures. Any technical or administrative problems during analysis, data review and reductions are listed within this narrative. Original Samples ID's were updated with client sample ID's sent from Accutest.

Internal Chain of Custody:

Custody was maintained for these samples.

Data Package:

The enclosed data package contains the following sections: Case Narrative, Chain of Custody, Cooler Receipt Checklist, Data Qualifier Review Sheet and data from the following fractions: Perchlorates by LCMSMS. This dated package, to the best of my knowledge, is in compliance with technical and administrative requirements.



Martha Harrison
Project Manager

CHAIN OF CUSTODY



CHAIN OF CUSTODY
Fresh Ponds Corporate Village, Building B
2235 Route 130, Dayton, NJ 08810
908-329-0200 FAX: 908-329-3499/3480

20040807334

Accutest Job #:	
Accutest Quote #:	

**Fresh Ponds Corporate Village, Building B
2235 Route 130, Dayton, NJ 08810
732-329-0200 FAX: 732-329-3499/3480**

A 74616

725

Fresh Ponds Corporate Village, Building B
2235 Route 130, Dayton, NJ 08810
732-329-0200 FAX: 732-329-3499/3480

274646

725

725

**Fresh Ponds Corporate Village, Building B
2235 Route 130, Dayton, NJ 08810
732-329-0200 FAX: 732-329-3499/3480**

174646

775

TR5

COOLER RECEIPT CHECKLIST



SAMPLE RECEIPT & REVIEW FORM

PM use only

Client: <u>Accutest</u>	SDG/ARCOC/Work Order:
Date Received: <u>8/11/04</u>	PM(A) Review (ensure non-conforming items are resolved prior to signing):
Received By: <u>CD</u>	<u>MDH - use time on chain - per email from Diane Komen</u>

Sample Receipt Criteria	Conforming	NA	Non-Conforming	Comments/Qualifiers (Required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	✓			Circle Applicable: seals broken damaged container leaking container other (describe)
2 Samples requiring cold preservation within (4 +/- 2 C)? Record preservation method.	✓			Circle Temp device serial # <u>ice bags</u> blue ice dry ice none <u>2.0</u>
3 Chain of custody documents included with shipment?	✓			
4 Sample containers intact and sealed?	✓			Circle Applicable: seals broken damaged container leaking container other (describe)
5 Samples requiring chemical preservation at proper pH?		✓		Sample ID's, containers affected and observed pH:
6 VOA vials free of headspace (defined as < 6mm bubble)?		✓		Sample ID's and containers affected:
7 Samples received within holding time?	✓			Id's and tests affected:
8 Sample ID's on COC match ID's on bottles?	✓			Sample ID's and containers affected:
9 Date & time on COC match date & time on bottles?			✓	Sample ID's affected: <u>wrong time 12:42 should be 12:30 #5</u>
10 Number of containers received match number indicated on COC?	✓		<u>CD</u> X	Sample ID's affected:
11 COC form is properly signed in relinquished/received sections?	✓			
12 Air Bill ,Tracking #'s, & Additional Comments	<u>Fed Ex</u> <u>6720 4493 9915</u>			

Radiological Information	Non-RAD	RAD	RADI	RSO RAD Receipt #
What is the radiological classification of the samples?	✓			Comments
Radioactivity Screening Results (maximum observed CPM)	<u>1000 PM</u>			*If > x2 area background is observed on a non-radioactive sample, contact the RSO to investigate.

PM (or PMA) review of Receiving Rad classification: 30 cpm Initials _____ Date _____

DATA REVIEW QUALIFIER FLAG DEFINITION SHEET

General Engineering Laboratories, LLC

DATA QUALIFIERS FOR ORGANIC ANALYSES

Data Qualifiers used on Form 1s or Certificates of Analysis (COA) follow the specifications set forth in the technical specifications of the most current CLP Statement of Work and are defined as follows:

Section	Explanation	Location
A	The TIC is suspected aldol-condensation product.	COA, Form 1, and EDD
B	Analyte was detected in the associated method blank as well as in the sample.	COA, Form 1, and EDD
C	Pesticide analyte has been confirmed by GC/MS.	COA, Form 1, and EDD
D	Analyte(s) quantified in an analysis performed at a secondary dilution factor.	COA, Form 1, and EDD
E	Identifies compounds whose concentrations exceed the upper level of the calibration range of the instrument for that specific analysis.	COA, Form 1, and EDD
J	This flag indicates an estimated value concerning either, (1) estimating a concentration for tentatively identified compounds (TICs), or (2) analyte detected at a level less than the RDL or PQL and greater than or equal to the MDL.	COA, Form 1, and EDD
N	Presumptive evidence based upon a mass spectral library search to make a tentative identification of the analyte.	COA, Form 1, and EDD
NJ	Analyte has been tentatively identified and the associated numerical value is estimated based upon 1:1 response factor to the nearest eluting internal standard.	COA, Form 1, and EDD
P	<ul style="list-style-type: none"> - Pesticide/PCB target analyte that is greater than 25% difference for the detected concentrations between the two GC columns. - HPLC target analyte that is greater than 40% difference for the detected concentrations between detectors or columns. 	Form 1 and EDD
U	Compound analyzed for but not detected (sample quantitation limit has been adjusted to reflect dilutions and percent moisture).	COA, Form 1, and EDD
X	Other reporting flag as defined in report narrative.	COA, Form 1, and EDD
**	Laboratory Control Sample recovery outside of acceptance limit.	QC Summary Report

All surrogate recoveries and acceptance ranges are reported at the bottom of Form 2 or COA.

General Engineering Laboratories, LLC.

DATA QUALIFIERS FOR INORGANIC ANALYSES

Data Qualifiers used on Form 1s or Certificates of Analysis (COA) follow the specifications set forth in the technical specifications of the most current CLP Statement of Work and are defined as follows:

Section	Explanation	Location
E	The qualifier that is used when the percent difference between the parent sample and its serial dilution's concentration exceeds 10%. The sample's concentration must be greater than 50 times the IDL/MDL for ICP or 100 times the absolute value of the preparation blank's concentration for ICP-MS. However, if analyzing ILMO 4.0 (ICP-MS), the parent sample's concentration must be 20 times the CRDL before the "E" flag is applied.	Form 1 and EDD
*	The qualifier that is used to indicate the duplicate sample analysis for an analyte is out of control.	Form 1 and EDD
B	The qualifier is used to indicate that the reported result fell above the IDL/MDL but below the CRDL.	Form 1 and EDD
N	This qualifier is used to indicate that the matrix or pre-digested spike sample recovery for an analyte is not within the specified control limit.	Form 1 and EDD
U	Analyte analyzed for but not detected above the PQL/CRDL.	COA, Form 1, and EDD
X	Other reporting flag as defined in report narrative.	Form 1 and EDD
**	Laboratory Control Sample (LCS) recovery for an analyte is outside of specified acceptance limit.	QC Summary Report

All surrogate recoveries and acceptance ranges are reported at the bottom of Form 2 or COA.

Any recoveries falling outside the acceptance range will be flagged with a **.

All flags do not apply to QC Summary and Certificate of Analysis packages.

LC/MS/MS PERCHLORATE ANALYSIS

**Perchlorate by LC/MSMS
Accutest Laboratories (ACTL)
SDG 118884**

Method/Analysis Information

Procedure: **Definitive Low Level Analysis Using Liquid Chromatography/Mass Spectrometry/Mass Spectrometry (LC/MS/MS) By SW-846 Method 8321 Modified (8321M)**

Analytical Method: SW846 8321A Modified

Prep Method: SW846 8321A Modified

Analytical Batch Number: 356966

Prep Batch Number: 356965

Sample Analysis

Sample ID	Client ID
118884001	RW0804-658-LakeviewDr
118884002	RW0804-653-LakeviewDr
118884003	RW0804-652-LakeviewDr
118884004	RWB0804-3536-FletchersWay
118884005	RW0804-NCNG
118884006	RW0804-FieldDup1
1200682090	Interference Check Sample (ICS)
1200682086	Method Blank (MB)
1200682089	Laboratory Control Sample (LCS)
1200682087	118884001(RW0804-658-LakeviewDR) Matrix Spike (MS)
1200682088	118884001(RW0804-658-LakeviewDR) Matrix Spike Duplicate (MSD)

Preparation/Analytical Method Verification

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by General Engineering

118884-PERLCMS

Page 1 of 4

Laboratories, LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-OA-E-056 REV# 6.

Calibration Information

Initial Calibration

All initial calibration requirements have been met for this SDG. Due to software constraints, all Initial Calibration Blanks must be designated as IPB001.

CCV Requirements

Some bracketing CCVs failed to meet acceptance criteria. The samples that were bracketed by these CCVs were reanalyzed and had acceptable bracketing CCVs. As a result, the second analysis was used for sample 118884006 (RW0804-FieldDup1).

CCB Requirements

All continuing calibration blanks (CCB) bracketing the analyses associated with this batch were within acceptance criteria.

Low Level Standard (CRI) Requirements

All low level calibration verification (CRI) requirements were met by all bracketing CRI standards and may be based off of the grand mean average percent recovery of all target analytes.

Quality Control (QC) Information

Method Blank (MB) Statement

The MB(s) analyzed with this SDG met the acceptance criteria.

Interference Check Sample (ICS)

The interference check sample (ICS) met all recovery acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

QC Sample Designation

Sample 118884001 (RW0804-658-LakeviewDr) was chosen for matrix spike analysis.

Matrix Spike (MS) Recovery Statement

All the matrix spike recoveries were within the established acceptance limits.

Matrix Spike Duplicate (MSD) Recovery Statement

The matrix spike duplicate recoveries for this SDG were within the established acceptance limits.

MS/MSD Relative Percent Difference (RPD) Statement

The RPD(s) between the MS and MSD met the acceptance limits.

Retention Time Standard Area Acceptance

The retention time standard areas were within the required acceptance criteria for all samples and QC.

Technical Information

Holding Time Specifications

GEL assigns holding times based on the associated methodology, which assigns the date and time from sample

118884-PERLCMS

Page 2 of 4

collection of sample receipt. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP.

Sample Dilutions

Sample 118884003 (RW0804-652-LakeviewDr) was diluted to bring the over range concentration within the calibration range.

Miscellaneous Information

Nonconformance (NCR) Documentation

A nonconformance report (NCR) has not been generated for this SDG.

Manual Integrations

Some initial calibration standards, continuing calibration standards, and/or samples may require manual integrations due to software limitations.

Method Comments

The sample(s) was/were not originally analyzed using EPA Method 314.0.

Additional Comments

Comments pertaining to Perchlorate-101 and/or the Perchlorate Isotope Ratio are applicable only when the client requests Perchlorate-101 and/or the Perchlorate Isotope Ratio be reported. Due to software constraints, Perchlorate, Perchlorate-101 and/or the Perchlorate Isotope Ratio appear on raw data and comments referring to them appear on certain Forms whether or not the client has requested one or all of them be reported.

Perchlorate Isotope Ratio

The Perchlorate isotope ratio met acceptance criteria for all samples and QC samples. Please see the isotope ratio criteria in the Miscellaneous Section.

System Configuration

The laboratory utilizes a liquid chromatography (HPLC) instrument configuration for explosives analyses. The chromatographic hardware system consists of a Waters Model 2795 with programmable gradient pumping and a 50 ul loop injector. The HPLC is coupled to a Micromass Model Quattro Micro MS/MS. The MS/MS is fitted with a negative Electrospray (ES-) interface.

Chromatographic Columns

Chromatographic separation of perchlorate is accomplished through analysis on the following anion column:

Dionex: IonPac AG-16 2 x 50 mm.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

118884-PERLCMS

Page 3 of 4

Review Validation:

GEL requires all analytical data to be verified by a qualified data validator. In addition, all data designated for CLP or CLP-like packaging will receive a third level validation upon completion of the data package.

Reviewer: Erin Haubert Date: 8/26/09

SAMPLE DATA SUMMARY

Perchlorate Analysis Data Sheet

Lab Name: General Engineering Laboratories

Lab Code: GEL

Instrument: LCMSMS

Method: SW846 8321A Modified

Matrix: WATER

Extraction Batch ID: 356965

Extraction Type: Filter/DAL

Sample Volume/Weight: 10.0 mL

Concentrated Extract Volume: 10.0

Client Sample No.

RW0804-658-LakeviewDr

Date Received: 11-AUG-04

GEL Job No (SDG): 118884

GEL Sample ID: 118884001

Date Filtered: 12-AUG-04

Injection Volume (uL): 50

% Solids:

CAS No.	Analyte [^]	MDL	RL	Conc*	Units	Q	Dilution Factor	Date Analyzed	GEL File ID
14797-73-0	Perchlorate	.05	.2	0.254	ug/L		1.00	12-AUG-04 21:07	per08120043a

[^] When the analyte name is Perchlorate Isotope Ratio the concentration is a unitless value calculated from the ratio of Perchlorate peak area to Perchlorate-101 peak area. The Perchlorate-101 and isotopic ratio results are provided for qualitative purposes only. The results are used to verify the presence and quantitation of Perchlorate.

*Concentration =

Instrument Value X $\frac{\text{Concentrated Extract Volume}}{\text{Aliquot}}$ X $\frac{1}{\% \text{Solids}}$

Perchlorate Analysis Data Sheet

Lab Name: General Engineering Laboratories

Lab Code: GEL

Instrument: LCMSMS

Method: SW846 8321A Modified

Matrix: WATER

Extraction Batch ID: 356965

Extraction Type: Filter/DAI

Sample Volume/Weight: 10.0 mL

Concentrated Extract Volume: 10.0

Client Sample No.

RW0804-653-LakeviewDr

Date Received: 11-AUG-04

GEL Job No (SDG): 118884

GEL Sample ID: 118884002

Date Filtered: 12-AUG-04

Injection Volume (uL): 50

%Solids:

CAS No.	Analyte [^]	MDL	RL	Conc*	Units	Q	Dilution Factor	Date Analyzed	GEL File ID
14797-73-0	Perchlorate	.05	.2	0.335	ug/L		1.00	12-AUG-04 21:28	per08120046a

[^] When the analyte name is Perchlorate Isotope Ratio the concentration is a unitless value calculated from the ratio of Perchlorate peak area to Perchlorate-101 peak area. The Perchlorate-101 and isotopic ratio results are provided for qualitative purposes only. The results are used to verify the presence and quantitation of Perchlorate.

*Concentration =

Instrument Value X $\frac{\text{Concentrated Extract Volume}}{\text{Aliquot}}$ X $\frac{1}{\% \text{Solids}}$

Form 1

Perchlorate Analysis Data Sheet

Lab Name: General Engineering Laboratories

Lab Code: GEL

Instrument: LCMSMS

Method: SW846 8321A Modified

Matrix: WATER

Extraction Batch ID: 356965

Extraction Type: Filter/DAI

Sample Volume/Weight: 10.0 mL

Concentrated Extract Volume: 10.0

Client Sample No.

RW0804-652-LakeviewDr

Date Received: 11-AUG-04

GEL Job No (SDG): 118884

GEL Sample ID: 118884003

Date Filtered: 12-AUG-04

Injection Volume (uL): 50

% Solids:

CAS No.	Analyte [^]	MDL	RL	Conc*	Units	Q	Dilution Factor	Date Analyzed	GEL File ID
14797-73-0	Perchlorate	.5	2	3.94	ug/L		10.0	13-AUG-04 11:22	per08130026a

[^] When the analyte name is Perchlorate Isotope Ratio the concentration is a unitless value calculated from the ratio of Perchlorate peak area to Perchlorate-101 peak area. The Perchlorate-101 and isotopic ratio results are provided for qualitative purposes only. The results are used to verify the presence and quantitation of Perchlorate.

*Concentration =

Instrument Value X $\frac{\text{Concentrated Extract Volume}}{\text{Aliquot}}$ X $\frac{1}{\% \text{ Solids}}$

Perchlorate Analysis Data Sheet

Lab Name: General Engineering Laboratories

Lab Code: GEL

Instrument: LCMSMS

Method: SW846 8321A Modified

Matrix: WATER

Extraction Batch ID: 356965

Extraction Type: Filter/DAI

Sample Volume/Weight: 10.0 mL

Concentrated Extract Volume: 10.0

Client Sample No.

RWB0804-3536-FletchersWay

Date Received: 11-AUG-04

GEL Job No (SDG): 118884

GEL Sample ID: 118884004

Date Filtered: 12-AUG-04

Injection Volume (uL): 50

% Solids:

CAS No.	Analyte [^]	MDL	RL	Conc*	Units	Q	Dilution Factor	Date Analyzed	GEL File ID
14797-73-0	Perchlorate	.05	.2	0.050	ug/L	U	1.00	13-AUG-04 11:29	per08130027a

[^] When the analyte name is Perchlorate Isotope Ratio the concentration is a unitless value calculated from the ratio of Perchlorate peak area to Perchlorate-101 peak area. The Perchlorate-101 and isotopic ratio results are provided for qualitative purposes only. The results are used to verify the presence and quantitation of Perchlorate.

*Concentration =

Instrument Value X $\frac{\text{Concentrated Extract Volume}}{\text{Aliquot}}$ X $\frac{1}{\% \text{Solids}}$

Perchlorate Analysis Data Sheet

Lab Name: General Engineering Laboratories

Lab Code: GEL

Instrument: LCMSMS

Method: SW846 8321A Modified

Matrix: WATER

Extraction Batch ID: 356965

Extraction Type: Filter/DAI

Sample Volume/Weight: 10.0 mL

Concentrated Extract Volume: 10.0

Client Sample No.

RW0804-NCNG

Date Received: 11-AUG-04

GEL Job No (SDG): 118884

GEL Sample ID: 118884005

Date Filtered: 12-AUG-04

Injection Volume (uL): 50

%Solids:

CAS No.	Analyte [^]	MDL	RL	Conc*	Units	Q	Dilution Factor	Date Analyzed	GEL File ID
14797-73-0	Perchlorate	.05	.2	0.294	ug/L		1.00	12-AUG-04 21:49	per08120049a

[^] When the analyte name is Perchlorate Isotope Ratio the concentration is a unitless value calculated from the ratio of Perchlorate peak area to Perchlorate-101 peak area. The Perchlorate-101 and isotopic ratio results are provided for qualitative purposes only. The results are used to verify the presence and quantitation of Perchlorate.

*Concentration =

Instrument Value X $\frac{\text{Concentrated Extract Volume}}{\text{Aliquot}}$ X $\frac{1}{\% \text{Solids}}$

Form 1

Perchlorate Analysis Data Sheet

Lab Name: General Engineering Laboratories

Lab Code: GEL

Instrument: LCMSMS

Method: SW846 8321A Modified

Matrix: WATER

Extraction Batch ID: 356965

Extraction Type: Filter/DAI

Sample Volume/Weight: 10.0 mL

Concentrated Extract Volume: 10.0

Client Sample No.

RW0804-FieldDupl

Date Received: 11-AUG-04

GEL Job No (SDG): 118884

GEL Sample ID: 118884006

Date Filtered: 12-AUG-04

Injection Volume (uL): 50

% Solids:

CAS No.	Analyte [^]	MDL	RL	Conc*	Units	Q	Dilution Factor	Date Analyzed	GEL File ID
14797-73-0	Perchlorate	.05	.2	0.291	ug/L		1.00	13-AUG-04 11:36	per08130028a

[^] When the analyte name is Perchlorate Isotope Ratio the concentration is a unitless value calculated from the ratio of Perchlorate peak area to Perchlorate-101 peak area. The Perchlorate-101 and isotopic ratio results are provided for qualitative purposes only. The results are used to verify the presence and quantitation of Perchlorate.

*Concentration =

Instrument Value X $\frac{\text{Concentrated Extract Volume}}{\text{Aliquot}}$ X $\frac{1}{\% \text{ Solids}}$

QUALITY CONTROL SUMMARY

Form 5

Perchlorate Laboratory Control Sample

Lab Name: General Engineering Laboratories

Lab Code: GEL GEL Job No. (SDG): 118884

Extract Batch Code: 356965 Date Filtered: 12-AUG-04

Matrix: WATER Sample ID: 1200682089

Analyte^	True	Found	Units	%Rec	Q	Control Limits
Perchlorate	0.200	.222	ug/L	111		85 - 115

^ When the analyte name is Perchlorate Isotope Ratio the concentration is a unitless value calculated from the ratio of Perchlorate peak area to Perchlorate-101 peak area. The Perchlorate-101 and isotopic ratio results are provided for qualitative purposes only. The results are used to verify the presence and quantitation of Perchlorate.

Comments:

Perchlorate Interference Check Sample

Lab Name: General Engineering Laboratories

Lab Code: GEL

GEL Job No. (SDG): 118884

Extract Batch Code: 356965

Date Filtered: 12-AUG-04

Matrix: WATER

Sample ID: 1200682090

Analyte [^]	True	Found	Units	%Rec	Q	Control Limits
Perchlorate	0.200	.227	ug/L	113		80 - 120

[^] When the analyte name is Perchlorate Isotope Ratio the concentration is a unitless value calculated from the ratio of Perchlorate peak area to Perchlorate-101 peak area. The Perchlorate-101 and isotopic ratio results are provided for qualitative purposes only. The results are used to verify the presence and quantitation of Perchlorate.

Quantify Sample Report
General Engineering Labs, LLC., Analyst : Janice Willey

Dataset: C:\MASSLYNX\New_Per.PRO\per081204a.qld, Time: Fri Aug 13 07:51:42 2004

Name: C:\MASSLYNX\NEW_PER.PRO\Data\per08120040a

Date: 12-Aug-2004

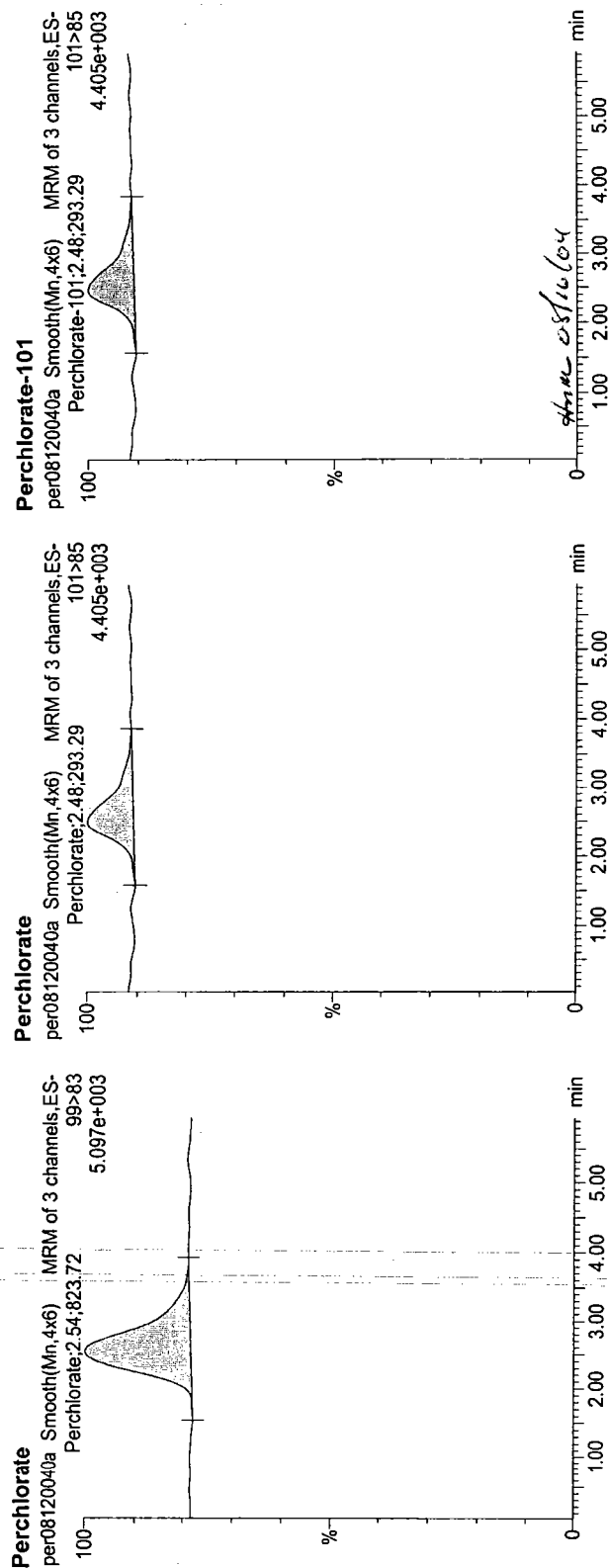
Time: 20:46:45

ID: 1200682090

Vial: 2:5,A

User:

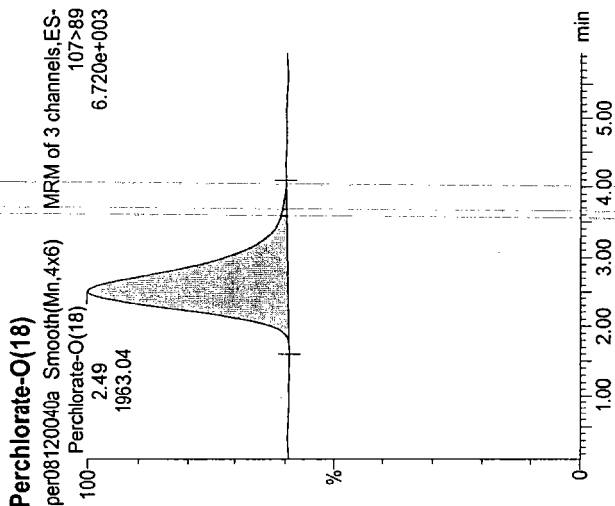
11CS1ACTL135096611



3/10/13

Quantify Sample Report
General Engineering Labs, LLC., Analyst : Janice Willey

Dataset: C:\MASSLYNX\New_Per.PRO\per081204a.qld, Time: Fri Aug 13 07:51:42 2004



#	ID	Name	Trace	RT	Area	IS Area	Abs.Resp	Response	Flags	Mod.D	Mod.TL	SIN	Conc.	%Rec	Ratio
1	1200682090	Perchlorate	99>83	2.54	823.718		823.718	823.718	MM	13-Aug..	07:48:29	220.7	0.2268	113.4	2.81
2	1200682090	Perchlorate-101	101>85	2.48	293.292		293.292	293.292	MM	13-Aug..	07:48:36	33.8	0.2194	109.7	
3	1200682090	Perchlorate-O(18)	107>89	2.49	1963.036		1963.036	1963.036	MM	13-Aug..	07:51:42	251.8	0.5121	102.4	

sum est 104

1CS11H201ACTL

4/10/18

Perchlorate Spike/Spike Duplicate Summary

Lab Name: General Engineering Laboratories

Lab Code: GEL

GEL Job No (SDG): 118884

Extract Batch Code: 356965

Date Extracted: 12-AUG-04

GEL MS/PS ID: 1200682087

Client ID: RW0804-658-LakeviewDr

GEL MSD/PSD ID: 1200682088

QC Type: MS

Compound^	Spike Added	Sample Conc	Units	MS Conc	MS Rec	#	MSD Conc	MSD Rec	#	RPD	#	RPD Limit	Recovery Limit
Perchlorate	0.200	0.254	ug/L	0.433	90		.45	98		9		30	75 - 125

^ When the analyte name is Perchlorate Isotope Ratio the concentration is a unitless value calculated from the ratio of Perchlorate peak area to Perchlorate-101 peak area. The Perchlorate-101 and isotopic ratio results are provided for qualitative purposes only. The results are used to verify the presence and quantitation of Perchlorate.

Comments:

Perchlorate Initial Calibration Blank

Lab Name: General Engineering Laboratories

GEL Job No.(SDG): 118884

Lab Code: GEL

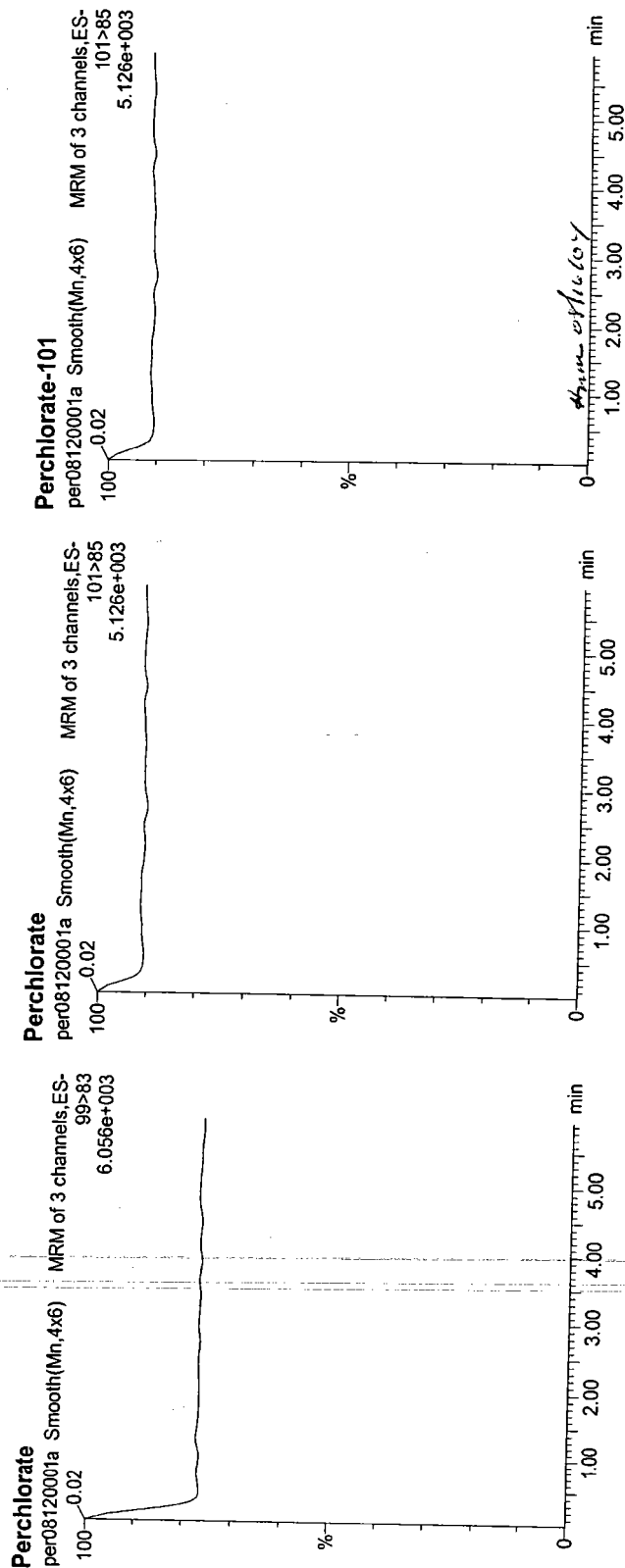
Reporting Units: ug/L

Analyte	True	Found	%Rec	Date Analyzed	GEL File Id	GEL Sample ID
Perchlorate	0.00	0	NA	12-AUG-04	per08120001a	IPB001
Perchlorate Isotope Ratio	0.00		NA	12-AUG-04	per08120001a	IPB001
Perchlorate-101	0.00	0	NA	12-AUG-04	per08120001a	IPB001
Perchlorate	0.00	0	NA	12-AUG-04	per08120002a	IPB001
Perchlorate Isotope Ratio	0.00		NA	12-AUG-04	per08120002a	IPB001
Perchlorate-101	0.00	0	NA	12-AUG-04	per08120002a	IPB001
Perchlorate	0.00	0	NA	13-AUG-04	per08130001a	IPB001
Perchlorate Isotope Ratio	0.00		NA	13-AUG-04	per08130001a	IPB001
Perchlorate-101	0.00	0	NA	13-AUG-04	per08130001a	IPB001
Perchlorate	0.00	0	NA	13-AUG-04	per08130002a	IPB001
Perchlorate Isotope Ratio	0.00		NA	13-AUG-04	per08130002a	IPB001
Perchlorate-101	0.00	0	NA	13-AUG-04	per08130002a	IPB001

Quantify Sample Report
 General Engineering Labs, LLC., Analyst : Janice Willey
 Dataset: C:\MASSLYNX\New_Per.PRO\per081204a.qld, Time: Fri Aug 13 07:51:42 2004
 Printed: Fri Aug 13 07:53:17 2004, Page 1 of 141

Method: C:\MASSLYNX\New_Per.PRO\MethDB\per081204a.mdb, Time: Thu Aug 12 14:44:30 2004
 Calibration: Untitled, Time: Fri Aug 13 07:41:38 2004

Name: C:\MASSLYNX\NEW_PER.PRO\Data\per08120001a
 Date: 12-Aug-2004
 Time: 16:06:03
 ID: IPB001
 Vial: 1:1A
 User:



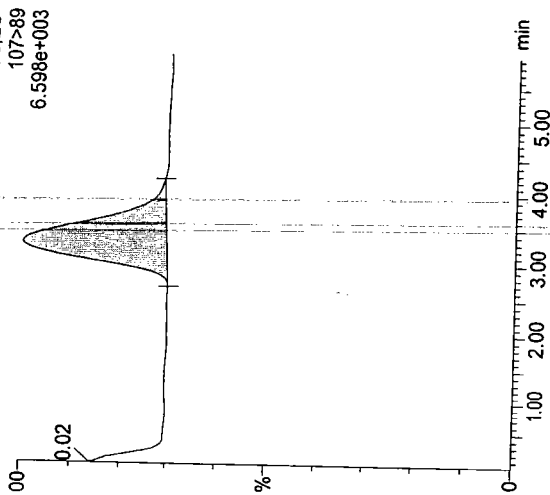
8/13/04

MM= Manually Modified

Dataset: C:\MASSLYNX\New_Per.PRO\per081204a.qld, Time: Fri Aug 13 07:51:42 2004

Perchlorate-O(18)

per08120001a Smooth(Mn,4x6) MRM of 3 channels,ES-
107>89
6.598e+003



# ID	Name	Trace	RT	Area	IS Area	Abs.Resp	Response	Flags	Mod.D...	Mod.TL...	S/N	Conc.	%Rec	Ratio
1	IPB001	Perchlorate	99>83											
2	IPB001	Perchlorate-101	101>85											
3	IPB001	Perchlorate-O(18)	107>89	3.27	1207.604	1207.604	1207.604	bb			86.1	0.3150	63.0	

4/9/04

4/9/04

Dataset: C:\MASSLYNX\New_Per.PRO\per081204a.qld, Time: Fri Aug 13 07:51:42 2004

Name: C:\MASSLYNX\NEW_PER.PRO\Data\per08120002a

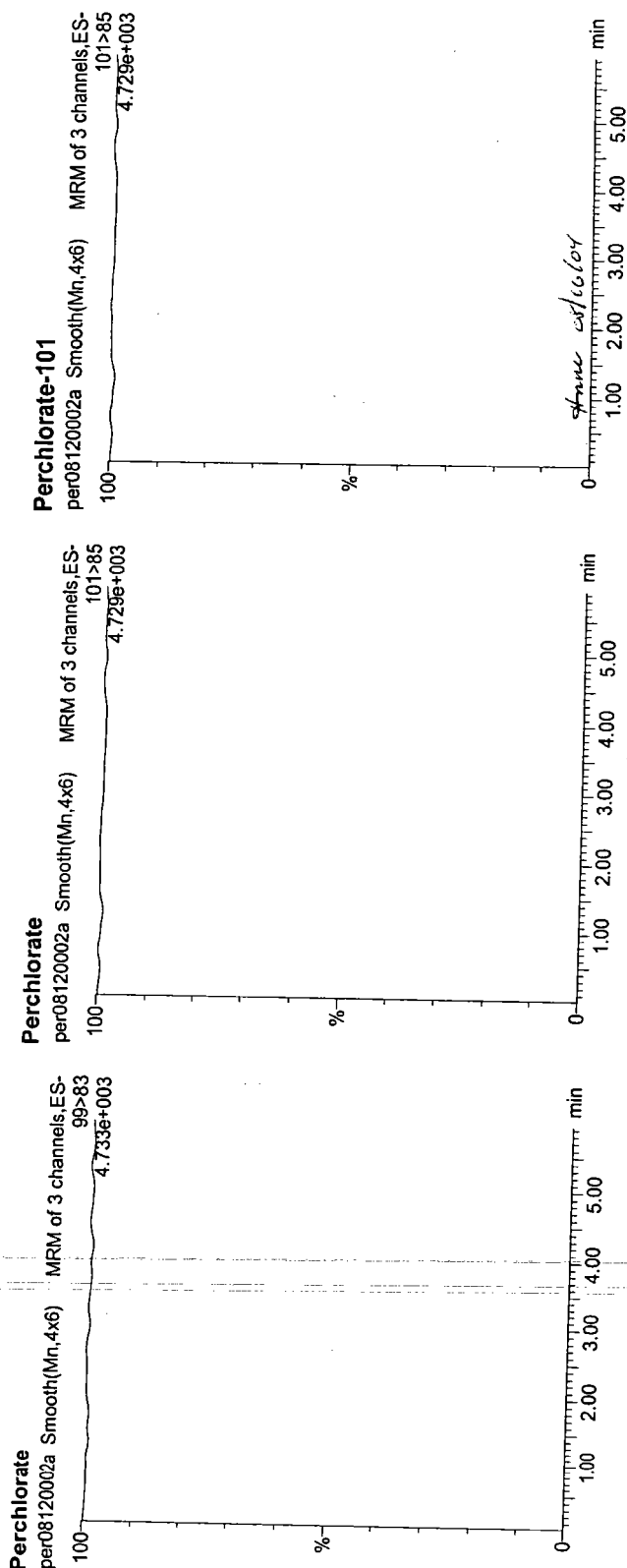
Date: 12-Aug-2004

Time: 16:15:44

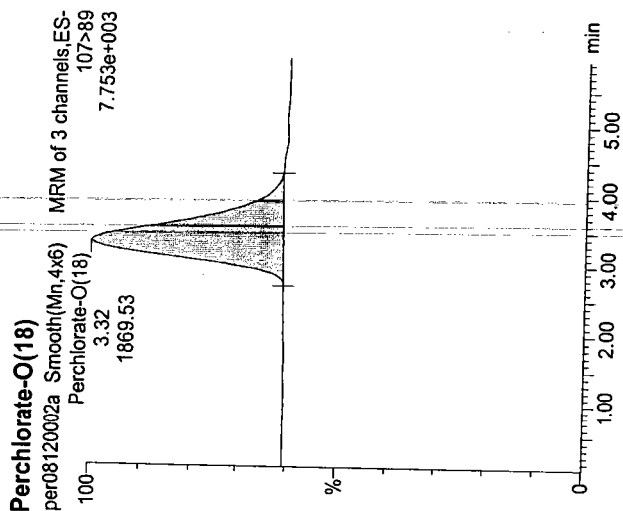
ID: IPB001

Vial: 1:1,A

User:



8/13/04



# ID	Name	Trace	RT	Area	IS Area	Abs. Resp	Response	Flags	Mod.D	Mod.TI	SIN	Conc.	%Rec	Ratio
1	IPB001	Perchlorate	99>83											
2	IPB001	Perchlorate-101	101>85											
3	IPB001	Perchlorate-O(18)	107>89	3.32	1869.532	1869.532	1869.532	bb			326.9	0.4877	97.5	

4/13/04

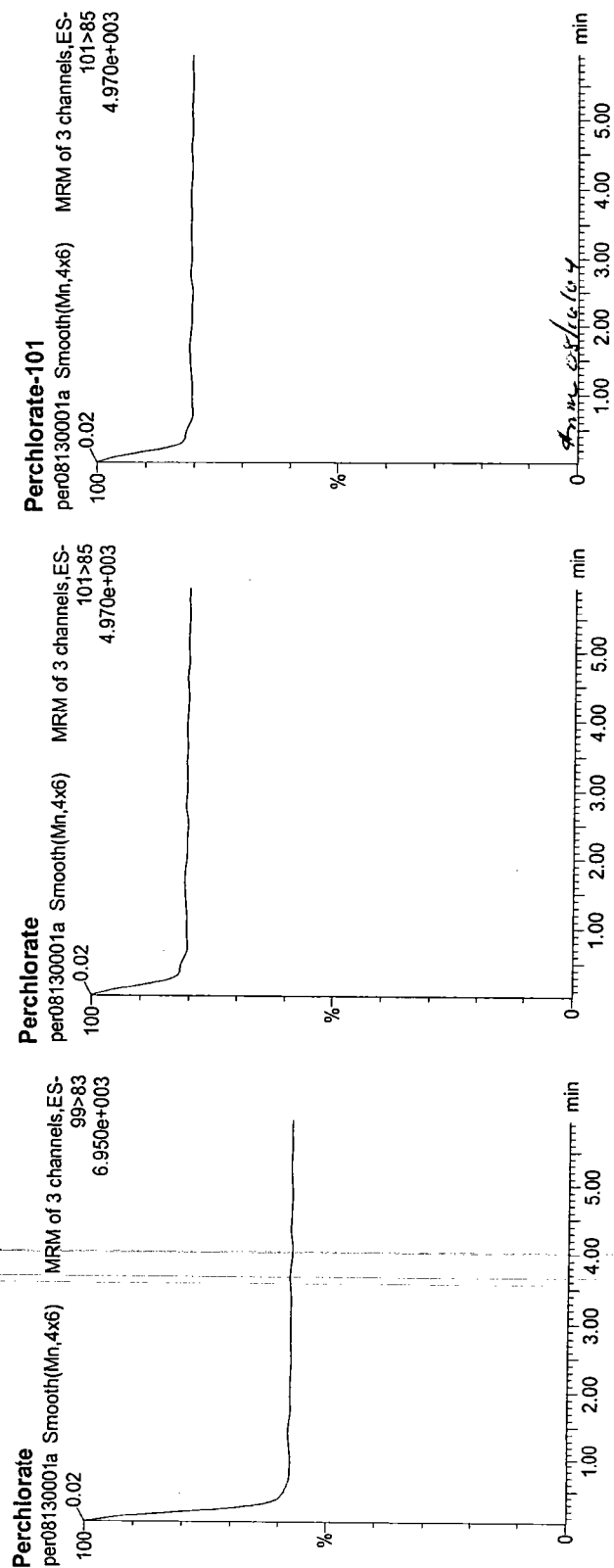
4/13/04

Quantify Sample Report
General Engineering Labs, LLC., Analyst: Janice Willey

Dataset: C:\MASSLYNX\New_Per.PRO\per081304a.qld, Time: Fri Aug 13 12:57:37 2004

Method: C:\MASSLYNX\New_Per.PRO\MethDB\per081304a.mdb, Time: Fri Aug 13 09:19:04 2004
Calibration: Untitled, Time: Fri Aug 13 12:57:37 2004

Name: C:\MASSLYNX\NEW_PER.PRO\Data\per08130001a
Date: 13-Aug-2004
Time: 08:10:06
ID: IPB001
Vial: 1:1,A
User:

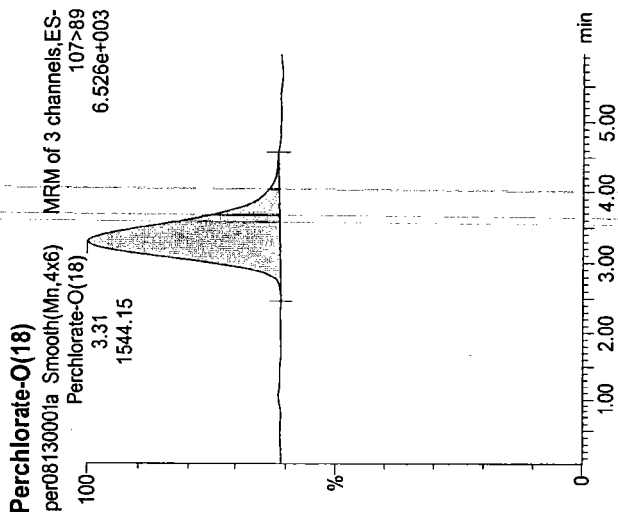


8/13/04

MM= Manually Modified

Quantify Sample Report
General Engineering Labs, LLC., Analyst : Janice Willey

Dataset: C:\MASSLYNX\New_Per.PRO\per081304a.qld, Time: Fri Aug 13 12:57:37 2004



# ID	Name	Trace	RT	Area	IS Area	Abs. Resp	Response	Flags	Mod.D	Mod.Ti	S/N	Conc.	%Rec	Ratio
1	IPB001	Perchlorate	99>83											
2	IPB001	Perchlorate-101	101>85											
3	IPB001	Perchlorate-O(18)	107>89	3.31	1544.150	1544.150	1544.150	bb			95.5	0.4358	87.2	4.41e-03 08/10/04

08/13/04

MM= Manually Modified

Quantify Sample Report

General Engineering Labs, LLC., Analyst : Janice Willey

Dataset: C:\MASSLYNX\New_Per.PRO\per081304a.qld, Time: Fri Aug 13 12:57:37 2004

Name: C:\MASSLYNX\NEW_PER.PRO\Data\per08130002a

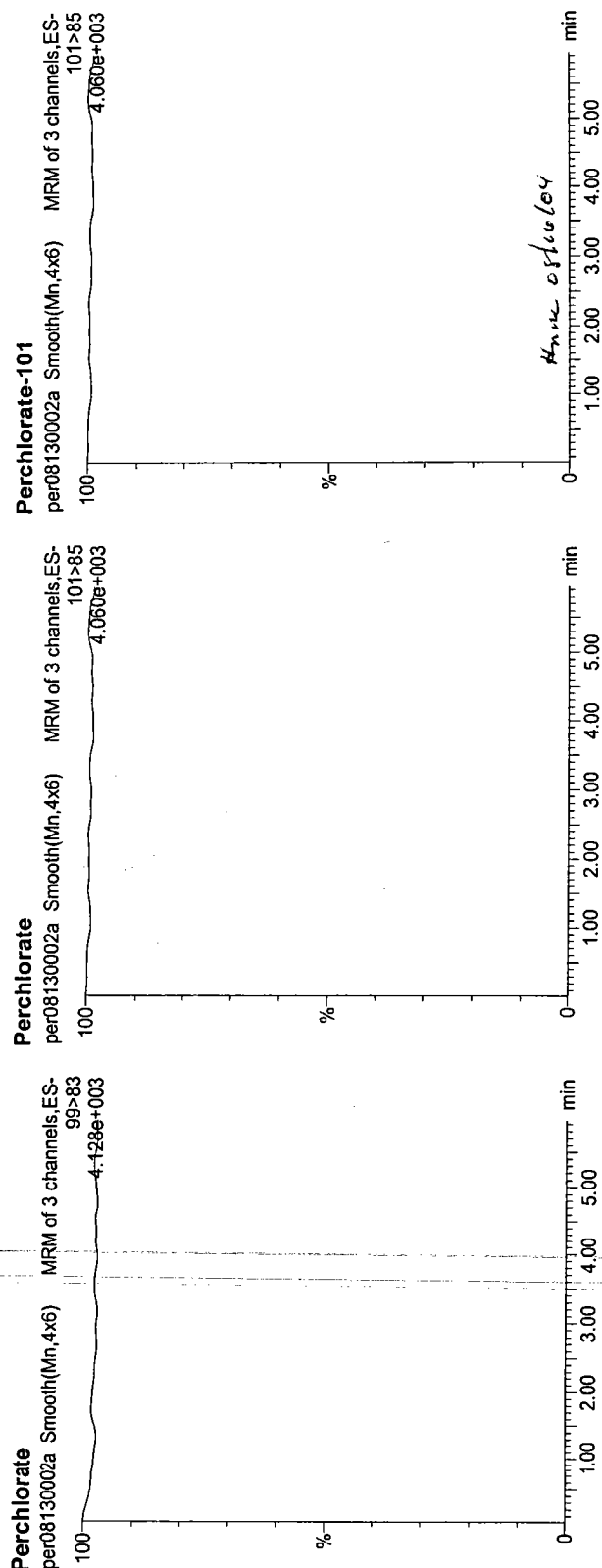
Date: 13-Aug-2004

Time: 08:19:47

ID: IPB001

Vial: 1:1,A

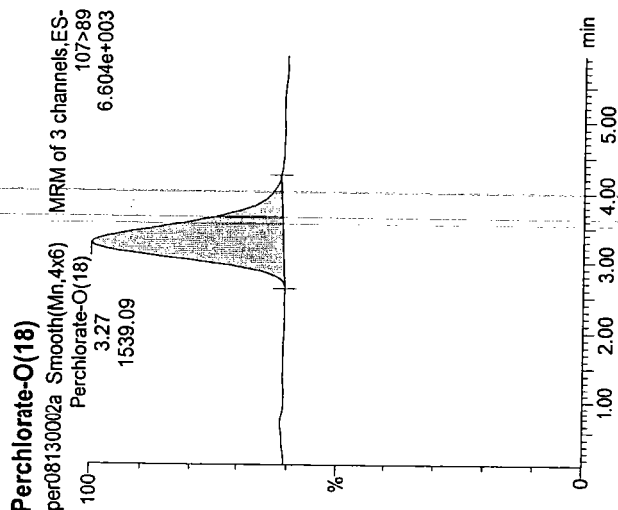
User:



12/5/15

MM= Manually Modified

Dataset: C:\MASSLYN\New_Per.PRO\per081304a.qld, Time: Fri Aug 13 12:57:37 2004



# ID	Name	Trace	RT	Area	IS Area	Abs Resp	Response	Flags	Mod.D	Mod.TI	S/N	Conc	%Rec	Ratio
1	IPB001	Perchlorate	99>83											
2	IPB001	Perchlorate-101	101>85											
3	IPB001	Perchlorate-O(18)	107>89	3.27	1539.086	1539.086	1539.086	bb			792.3	0.4344	86.9	

Handwritten: 08/16/04

Handwritten: 08/16/04

Form 4

Perchlorate Continuing Calibration Blank

Lab Name: General Engineering Laboratories

GEL Job No.(SDG): 118884

Lab Code: GEL

Reporting Units: ug/L

Analyte	True	Found	%Rec	Date Analyzed	GEL File Id	GEL Sample ID
Perchlorate	0.00	0	NA	12-AUG-04	per08120009a	IPB002
Perchlorate Isotope Ratio	0.00		NA	12-AUG-04	per08120009a	IPB002
Perchlorate-101	0.00	0	NA	12-AUG-04	per08120009a	IPB002
Perchlorate	0.00	0	NA	12-AUG-04	per08120038a	IPB005
Perchlorate Isotope Ratio	0.00		NA	12-AUG-04	per08120038a	IPB005
Perchlorate-101	0.00	0	NA	12-AUG-04	per08120038a	IPB005
Perchlorate	0.00	0	NA	12-AUG-04	per08120051a	IPB006
Perchlorate Isotope Ratio	0.00		NA	12-AUG-04	per08120051a	IPB006
Perchlorate-101	0.00	0	NA	12-AUG-04	per08120051a	IPB006
Perchlorate	0.00	0	NA	13-AUG-04	per08130009a	IPB002
Perchlorate Isotope Ratio	0.00		NA	13-AUG-04	per08130009a	IPB002
Perchlorate-101	0.00	0	NA	13-AUG-04	per08130009a	IPB002
Perchlorate	0.00	0	NA	13-AUG-04	per08130022a	IPB004 IPB003

11/17
9/23/04

Form 4

Perchlorate Continuing Calibration Blank

Lab Name: General Engineering Laboratories

GEL Job No.(SDG): 118884

Lab Code: GEL

Reporting Units: ug/L

Analyte	True	Found	%Rec	Date Analyzed	GEL File Id	GEL Sample ID
Perchlorate Isotope Ratio	0.00		NA	13-AUG-04	per08130022a	IPB004 IPB003
Perchlorate-101	0.00	0	NA	13-AUG-04	per08130022a	IPB004
Perchlorate	0.00	0	NA	13-AUG-04	per08130030a	IPB004
Perchlorate Isotope Ratio	0.00		NA	13-AUG-04	per08130030a	IPB004
Perchlorate-101	0.00	0	NA	13-AUG-04	per08130030a	IPB004

MTT
9/23/04

Quantify Sample Report
General Engineering Labs, LLC., Analyst : Janice Willey

Dataset: C:\MASSLYNX\New_Per.PRO\per081204a.qld, Time: Fri Aug 13 07:51:42 2004

Name: C:\MASSLYNX\NEW_PER.PRO\Data\per08120009a

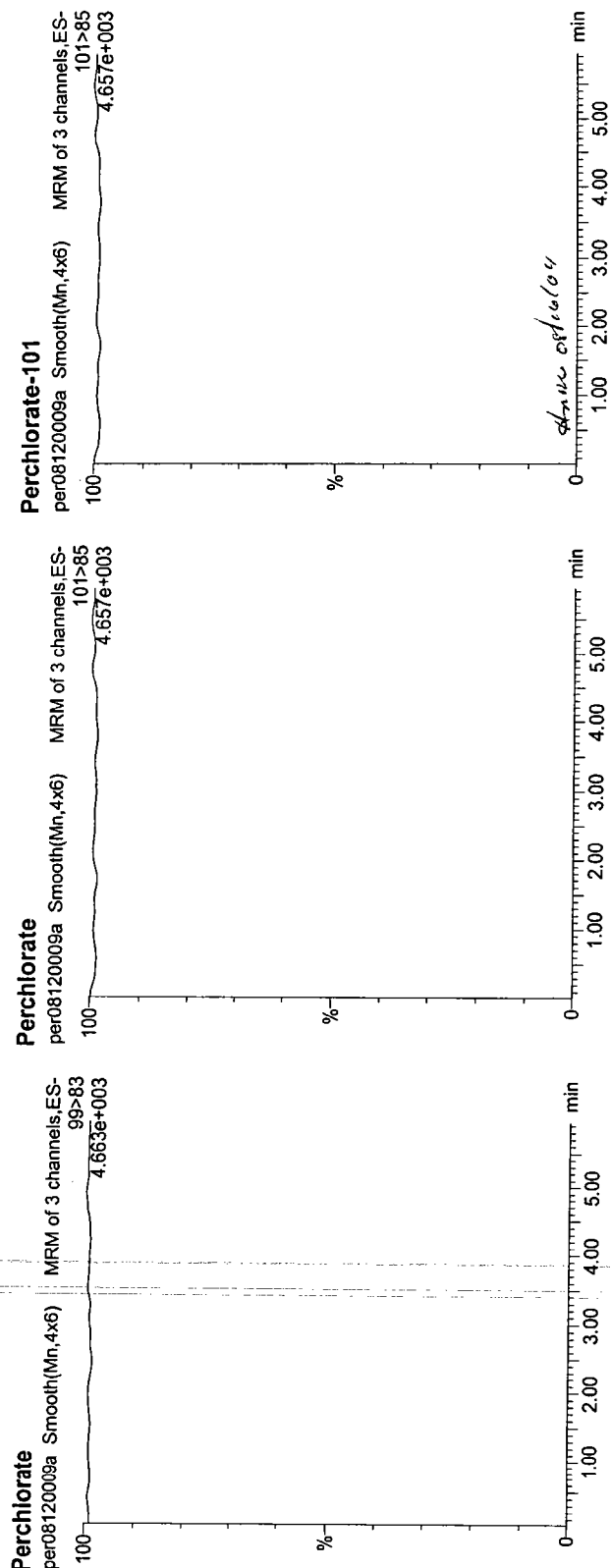
Date: 12-Aug-2004

Time: 17:04:41

ID: IPB002

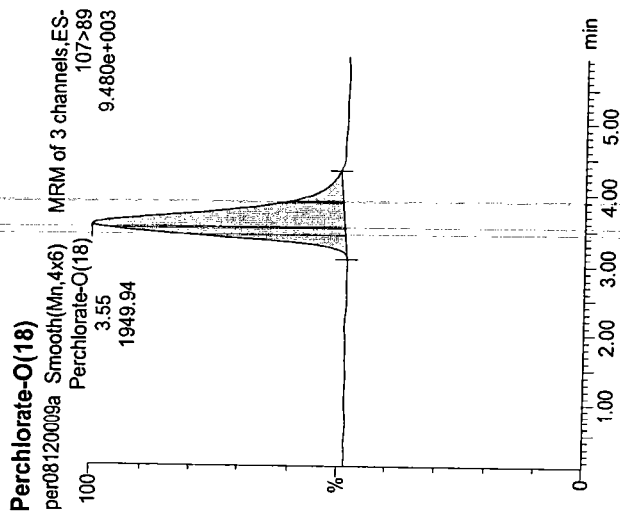
Vial: 1:1,A

User:



12/13/04

MM= Manually Modified



# ID	Name	Trace	RT	Area	IS Area	Abs. Resp	Response	Flags	Mod.D.	Mod.TI	S/N	Conc.	%Rec	Ratio
1	IPB002	Perchlorate	99>83											
2	IPB002	Perchlorate-101	101>85											
3	IPB002	Perchlorate-O(18)	107>89	3.55	1949.944	1949.944	1949.944	bb			572.9	0.5087	101.7	

4mm x 8mm x 100

8-24/12

Quantify Sample Report
 General Engineering Labs, LLC., Analyst : Janice Willey
 Dataset: C:\MASSLYNX\New_Per.PRO\per081204a.qld, Time: Fri Aug 13 07:51:42 2004
 Printed: Fri Aug 13 07:53:17 2004, Page 75 of 141

Name: C:\MASSLYNX\NEW_PER.PRO\Data\per08120038a

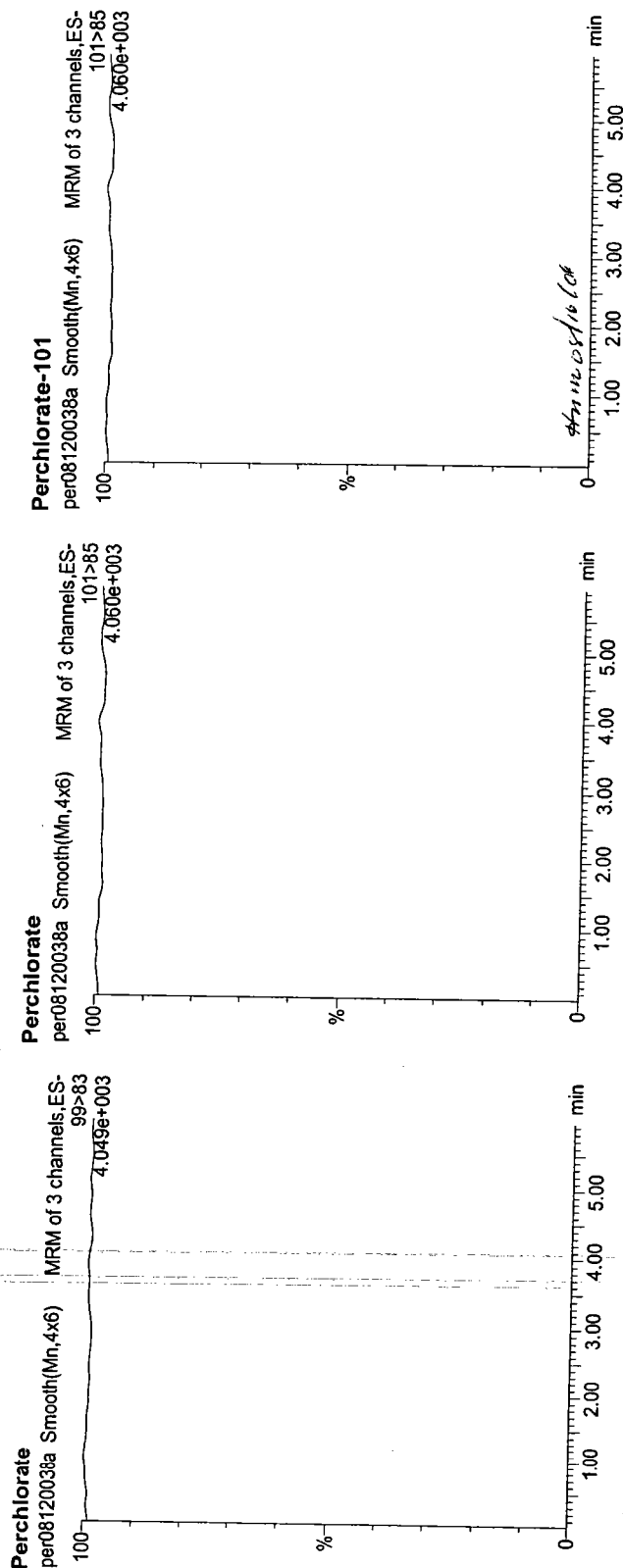
Date: 12-Aug-2004

Time: 20:32:46

ID: IPB005

Vial: 3:1,8

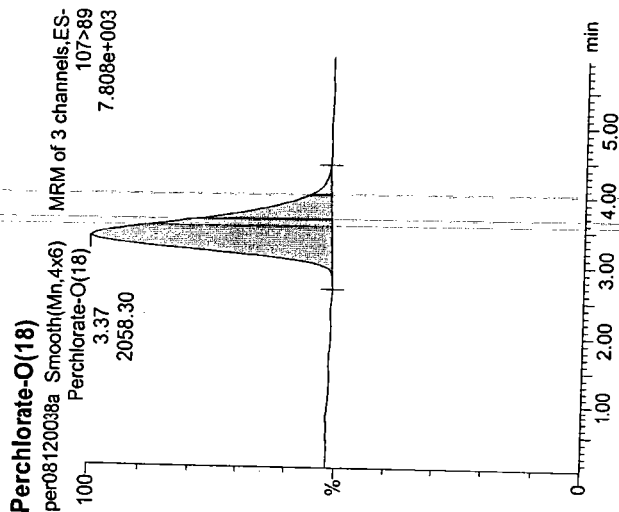
User:



4.060 min

MM= Manually Modified

Dataset: C:\MASSLYNX\New_Per.PRO\per081204a.qld, Time: Fri Aug 13 07:51:42 2004



# ID	Name	Trace	RT	Area	IS Area	Abs Resp	Response	Flags	Mod.D	Mod.T	S/N	Conc	%Rec	Ratio
1	IPB005	Perchlorate	99>83											
2	IPB005	Perchlorate-101	101>85											
3	IPB005	Perchlorate-O(18)	107>89	3.37	2058.301	2058.301	2058.301	bb			190.7	0.5369	107.4	✓

from 08/16/04

8/13/04

Dataset: C:\MASSLYNX\New_Per.PRO\per081204a.qld, Time: Fri Aug 13 07:51:42 2004

Name: C:\MASSLYNX\NEW_PER.PRO\Data\per08120051a

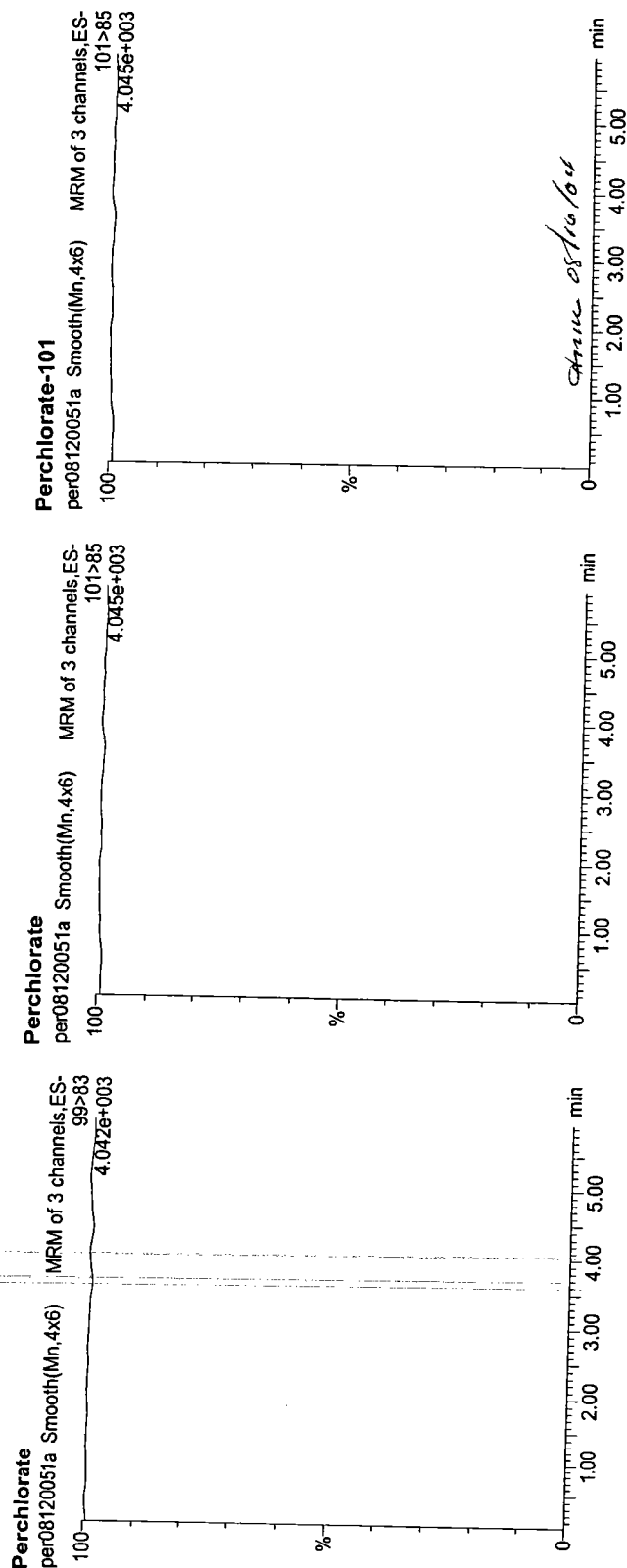
Date: 12-Aug-2004

Time: 22:03:41

ID: IPB006

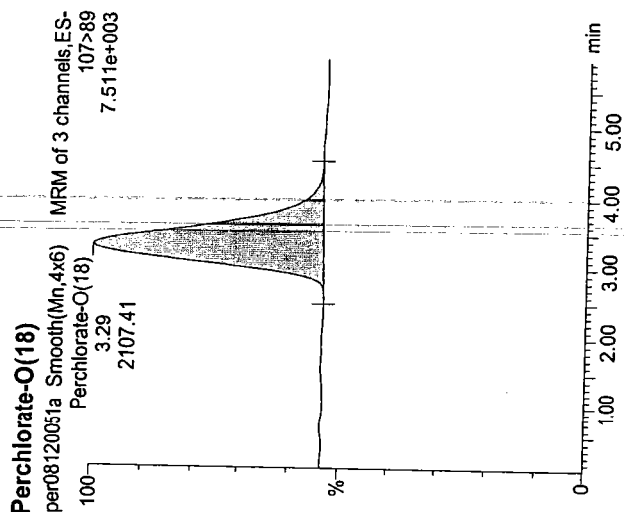
Vial: 3:1,B

User:



MM= Manually Modified

Dataset: C:\MASSLYNX\New_Per.PRO\per081204a.qld, Time: Fri Aug 13 07:51:42 2004



# ID	Name	Trace	RT	Area	IS Area	Abs Resp	Response	Flags	Mod.D.	Mod.TL	S/N	Conc	%Rec	Ratio
1	IPB006	Perchlorate	99>83											
2	IPB006	Perchlorate-101	101>85											
3	IPB006	Perchlorate-O(18)	107>89	3.29	2107.410	2107.410	2107.410	bb			601.9	0.5497	109.9	✓

Amu 081604

1/21/04

Dataset: C:\MASSLYNX\New_Per.PRO\per081304a.qld, Time: Fri Aug 13 12:57:37 2004

Name: C:\MASSLYNX\NEW_PER.PRO\Data\per08130009a

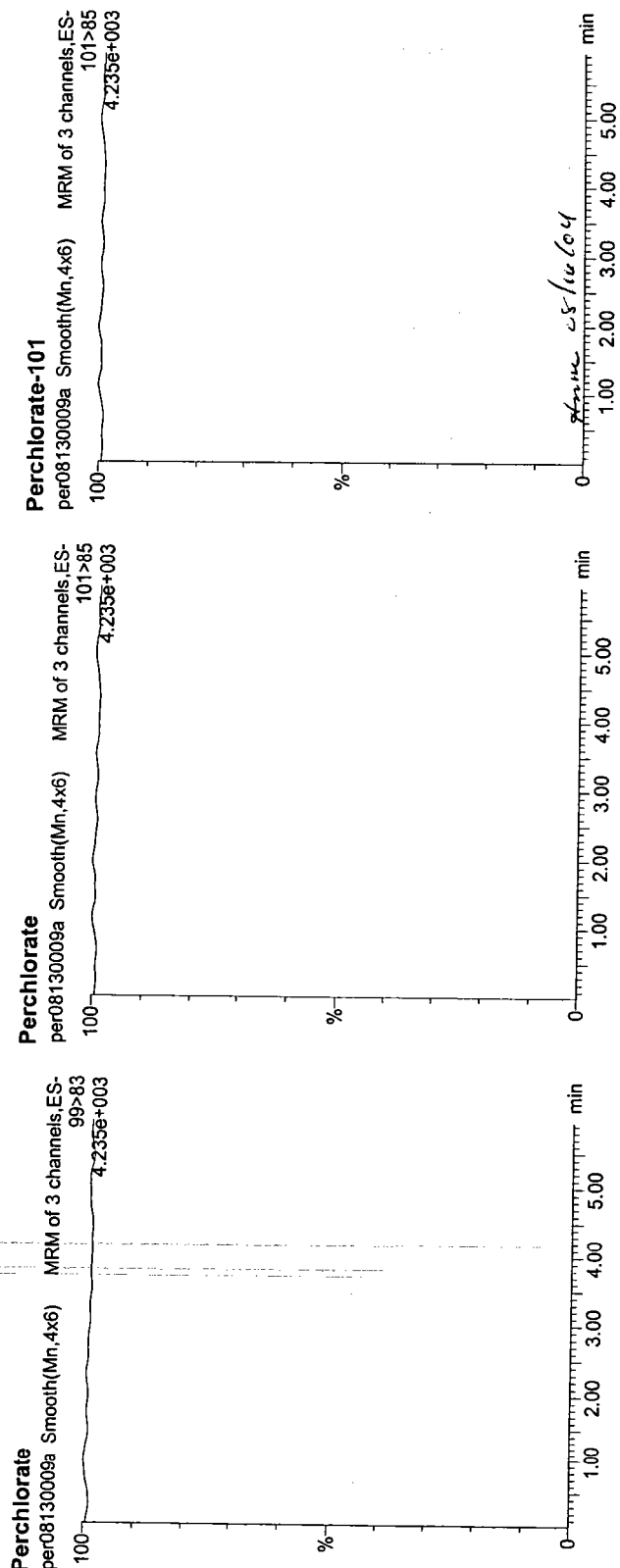
Date: 13-Aug-2004

Time: 09:08:44

ID: IPB002

Vial: 1:1,A

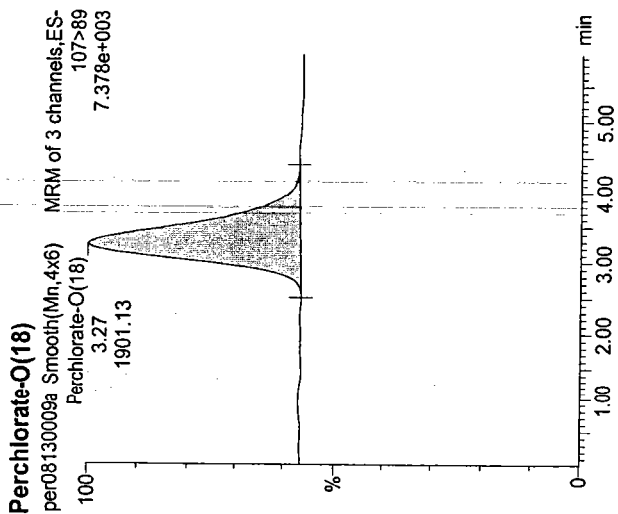
User:



8/13/04

MM= Manually Modified

Dataset: C:\MASSLYNX\New_Per.PRO\per081304a.qld, Time: Fri Aug 13 12:57:37 2004



#	ID	Name	Trace	RT	Area	IS Area	Abs.Resp	Response	Flags	Mod.D.	Mod.Ti.	S/N	Conc	%Rec	Ratio
1	IPB002	Perchlorate	99>83												
2	IPB002	Perchlorate-101	101>85												
3	IPB002	Perchlorate-O(18)	107>89	3.27	1901.126		1901.126	1901.126	bb			269.6	0.5365	107.3	

Handwritten: 422 AL ep/16/04

Handwritten: 8/13/04

Quantify Sample Report
General Engineering Labs, LLC., Analyst : Janice Willey

Dataset: C:\MASSLYNX\New_Per.PRO\per081304a.qld, Time: Fri Aug 13 12:57:37 2004

Name: C:\MASSLYNX\NEW_PER.PRO\Data\per08130022a

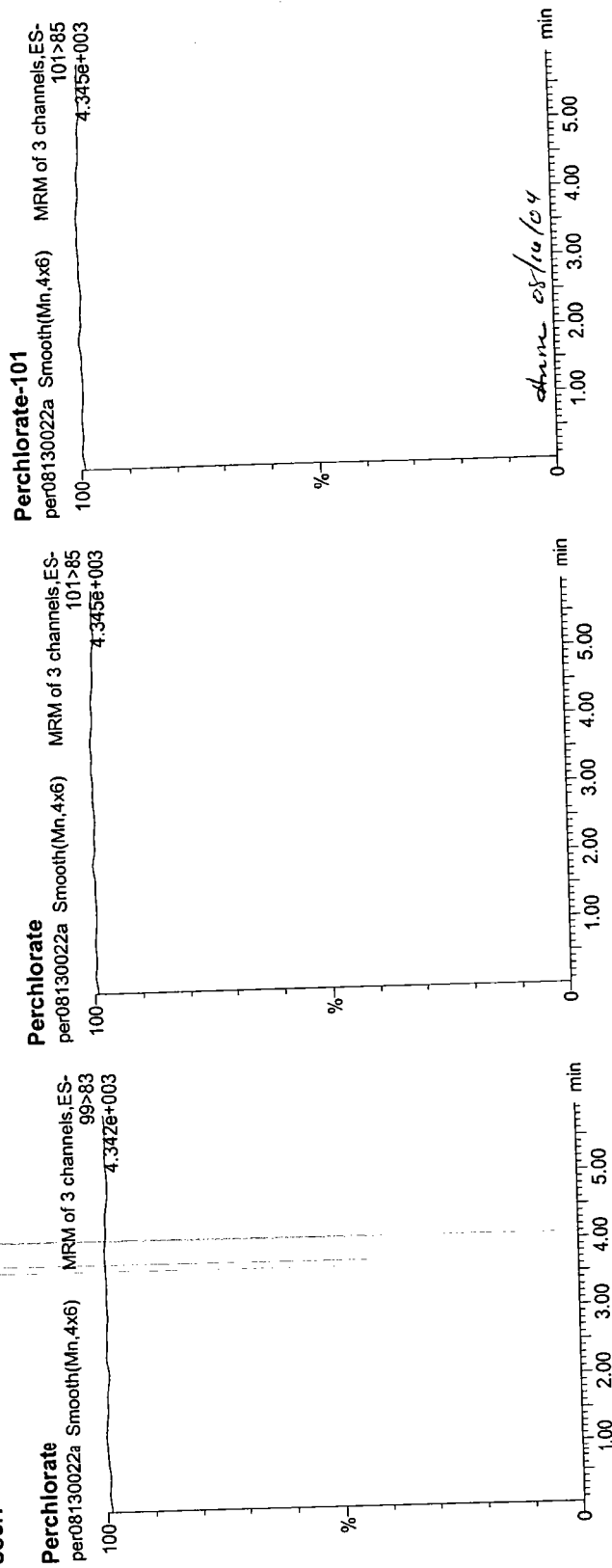
Date: 13-Aug-2004

Time: 10:52:03

ID: **IPB004** IPB003

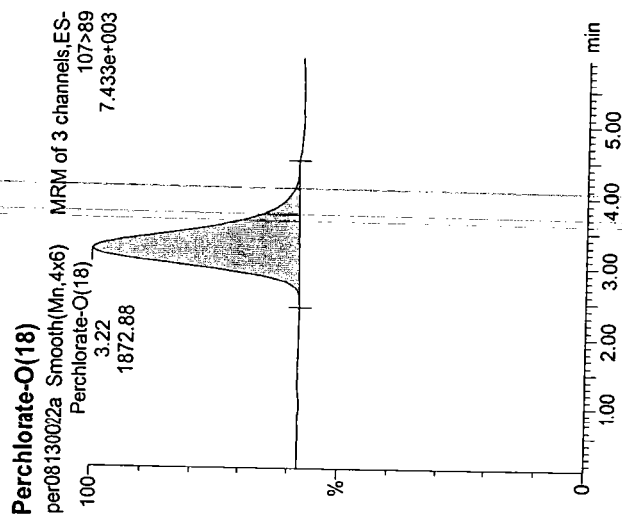
Vial: 1:1,A

User:



Handwritten: 8/12/04
MM=

Dataset: C:\MASSLYNX\New_Per.PRO\per081304a.qld, Time: Fri Aug 13 12:57:37 2004



#	ID	Name	Trace	RT	Area	IS Area	Abs Resp	Response	Flags	Mod.D...	Mod.Ti...	S/N	Conc.	%Rec	Ratio
1	IPB004	Perchlorate	99>83												
2	IPB004	IPB003	Perchlorate-101	101>85											
3	IPB004	Perchlorate-O(18)	107>89	3.22	1872.877		1872.877	1872.877	bb			377.4	0.5286	105.7	

from 081304a

8/13/04

MM= Manually Modified

Quantify Sample Report

General Engineering Labs, LLC., Analyst : Janice Willey

Dataset: C:\MASSLYNX\New_Per.PRO\per081304a.qld, Time: Fri Aug 13 12:57:37 2004

Name: C:\MASSLYNX\NEW_PER.PRO\Data\per08130030a

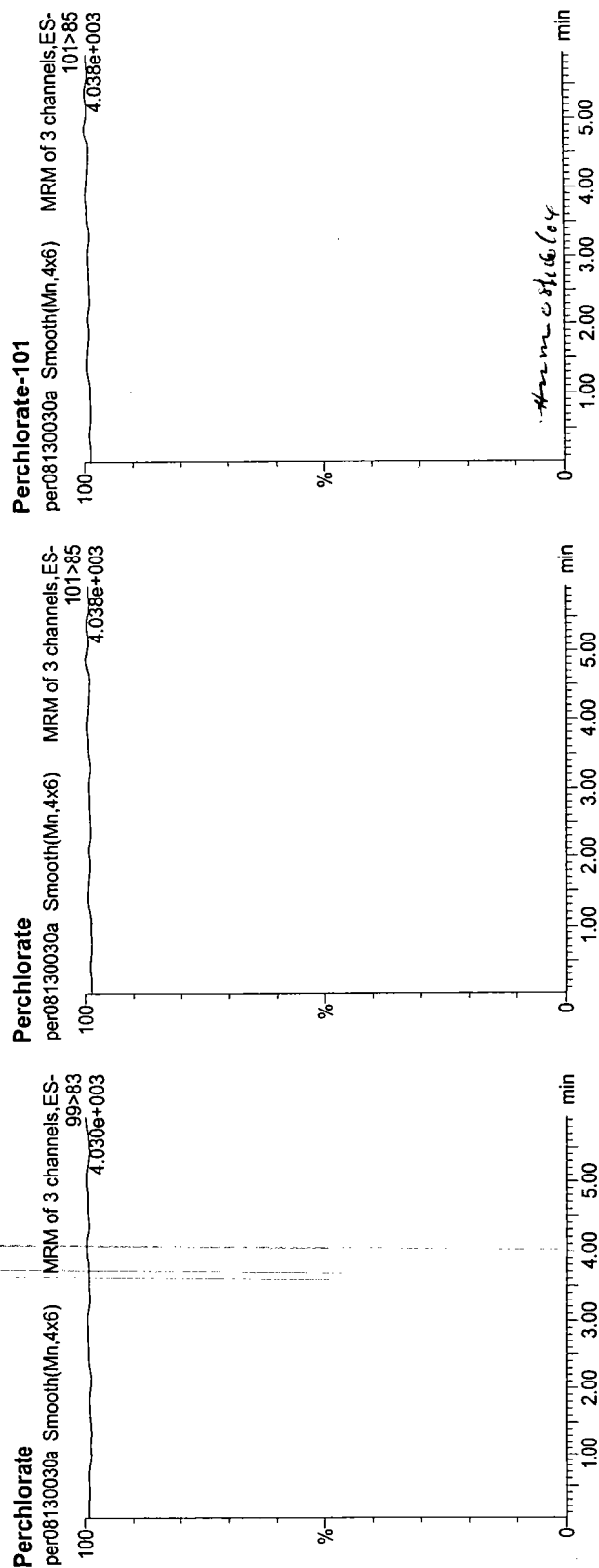
Date: 13-Aug-2004

Time: 11:53:18

ID: IPB004

Vial: 1:1,A

User:

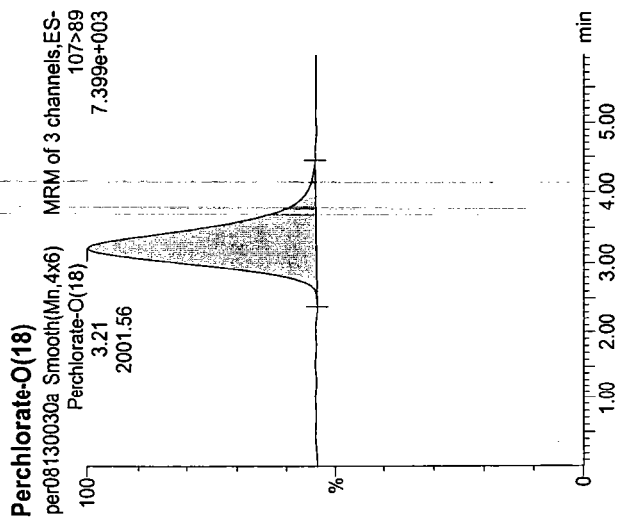


8/13/04

MM= Manually Modified

Quantify Sample Report
General Engineering Labs, LLC., Analyst : Janice Willey

Dataset: C:\MASSLYNX\New_Per.PRO\per081304a.qld, Time: Fri Aug 13 12:57:37 2004



# ID	Name	Trace	RT	Area	IS Area	Abs Resp	Response	Flags	Mod.D...	Mod.T...	S/N	Conc.	%Rec	Ratio
1	IPB004	Perchlorate												
2	IPB004	Perchlorate-101												
3	IPB004	Perchlorate-O(18)	3.21	2001.561		2001.561	2001.561	bb			395.4	0.5649	113.0	

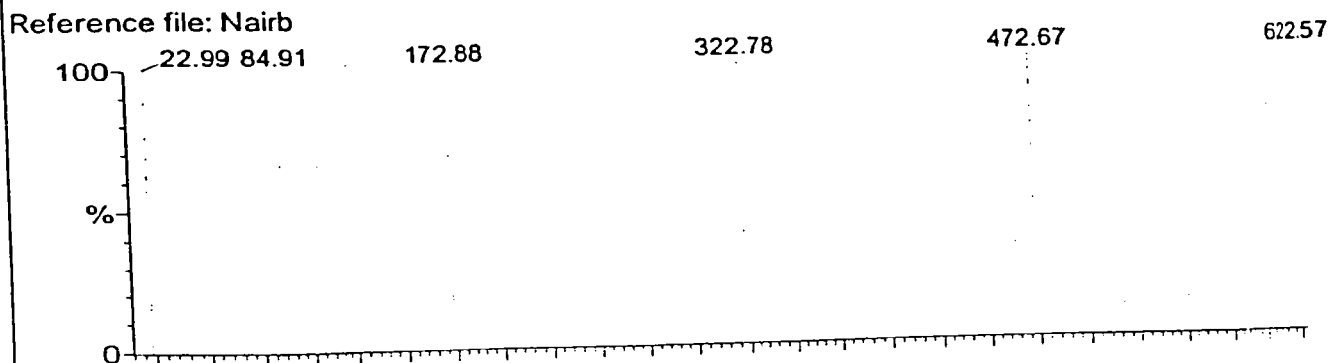
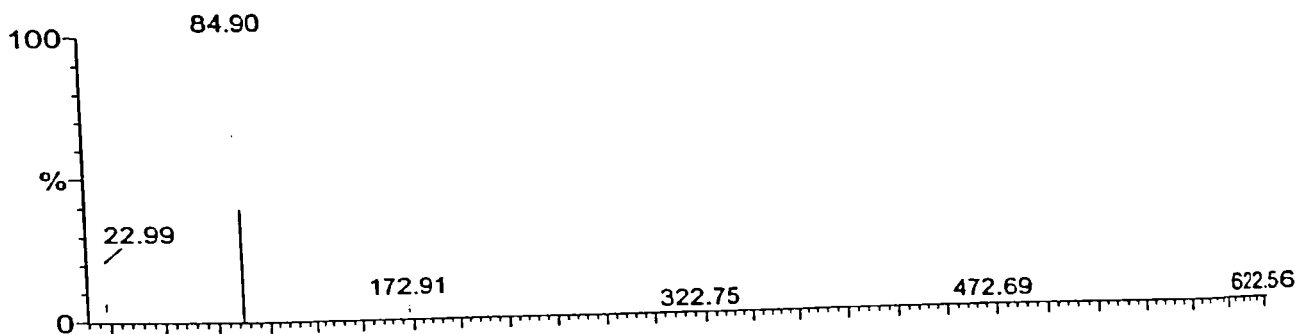
Handwritten: 100% esth low

Handwritten: 6/13/04 JGL

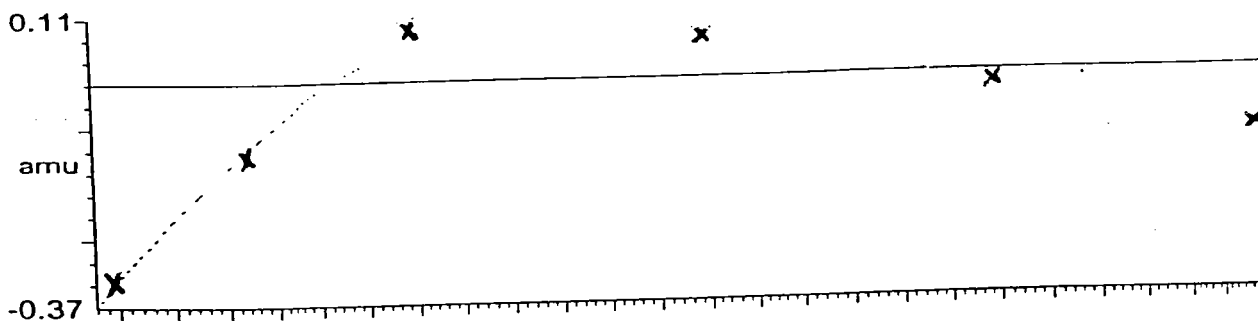
Calibration Report - MS1 Static

Printed: Tue Aug 19 14:50:29 2003

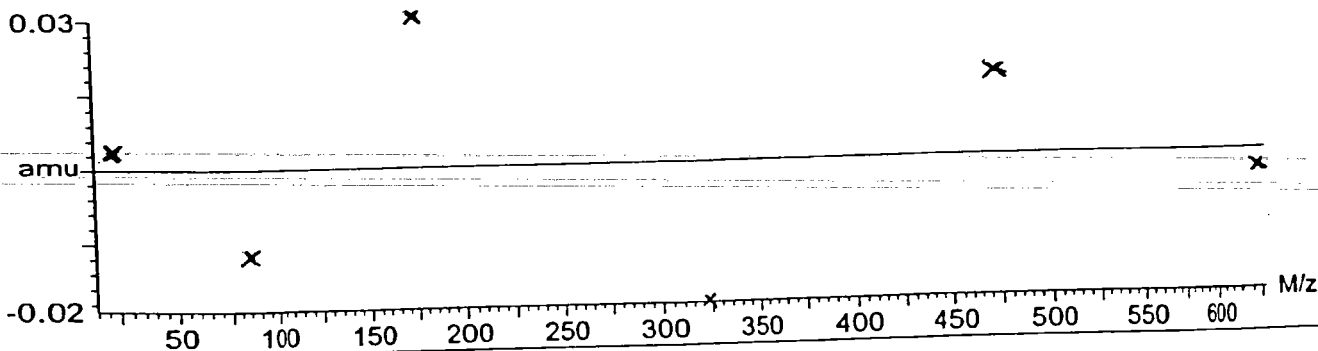
Data file: STATMS1 - Calibrated 6 matches of 6 tested references



Mass difference (Raw - Ref mass)



Residuals



Mean residual = $5.820766 \times 10^{-10} \pm 0.017182$

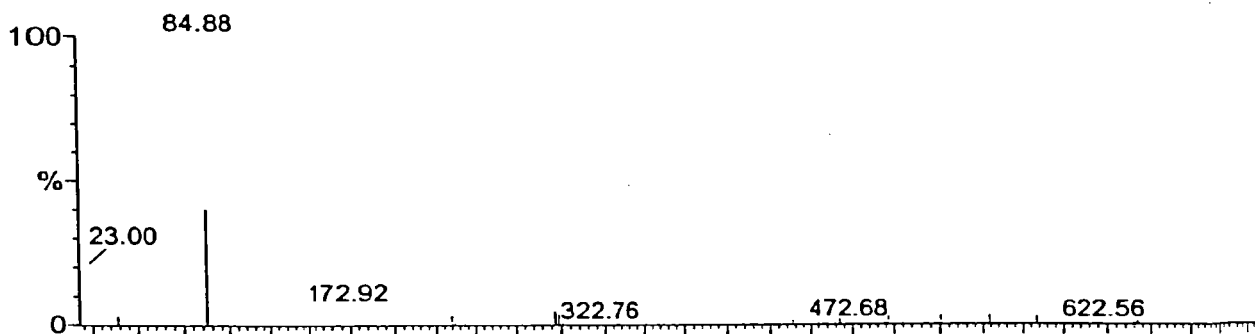
Calibration Report - MS1 Scanning

Page 1 of 1

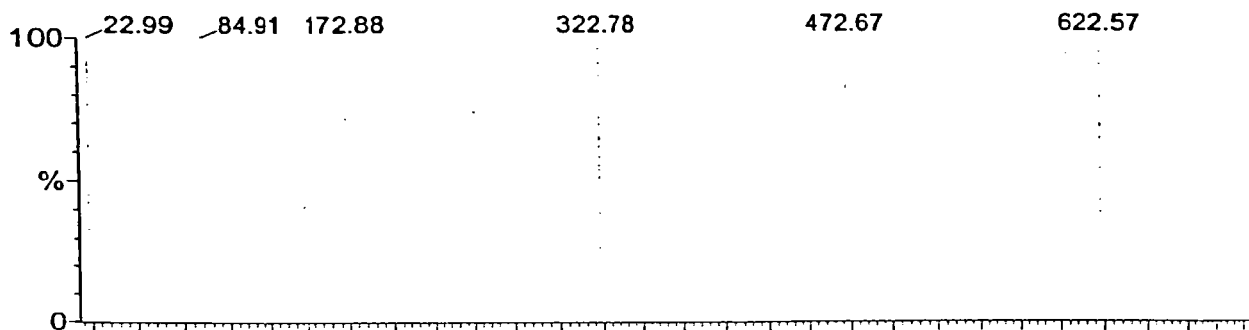
Printed: Tue Aug 19 14:51:21 2003

Data file: SCNMS1 - Calibrated

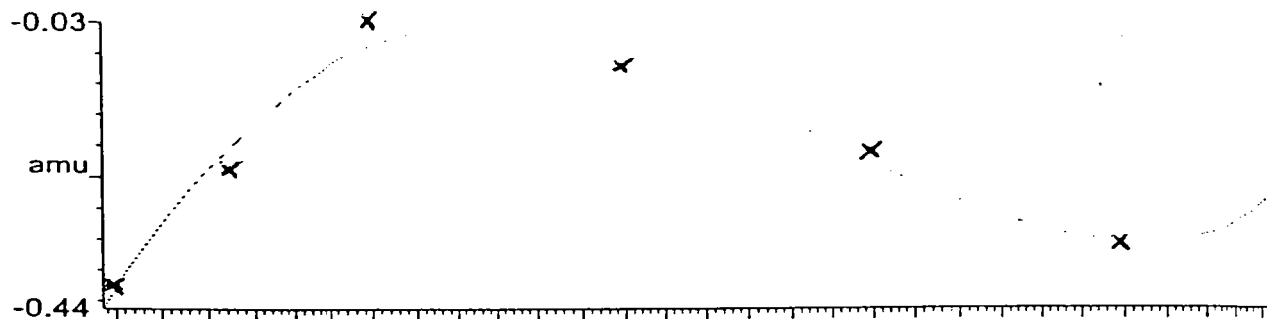
6 matches of 6 tested references



Reference file: Nairb

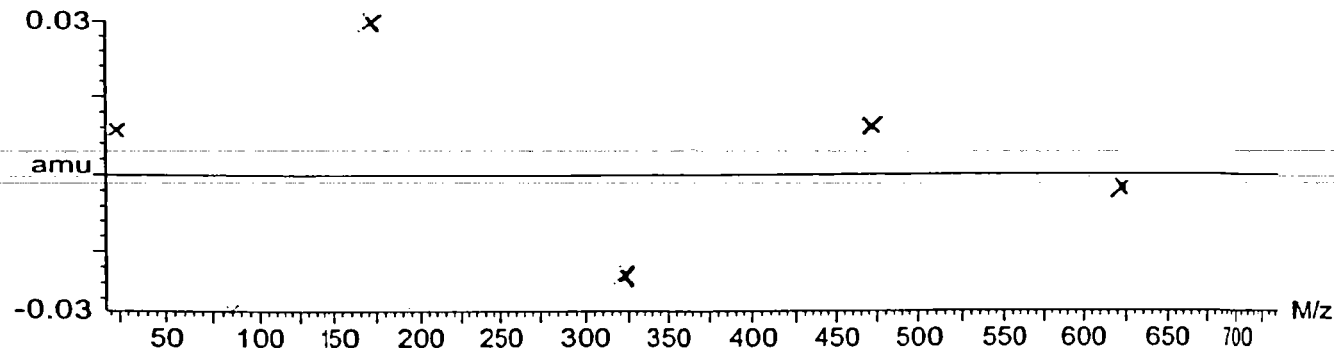


Mass difference (Raw - Ref mass)



Residuals

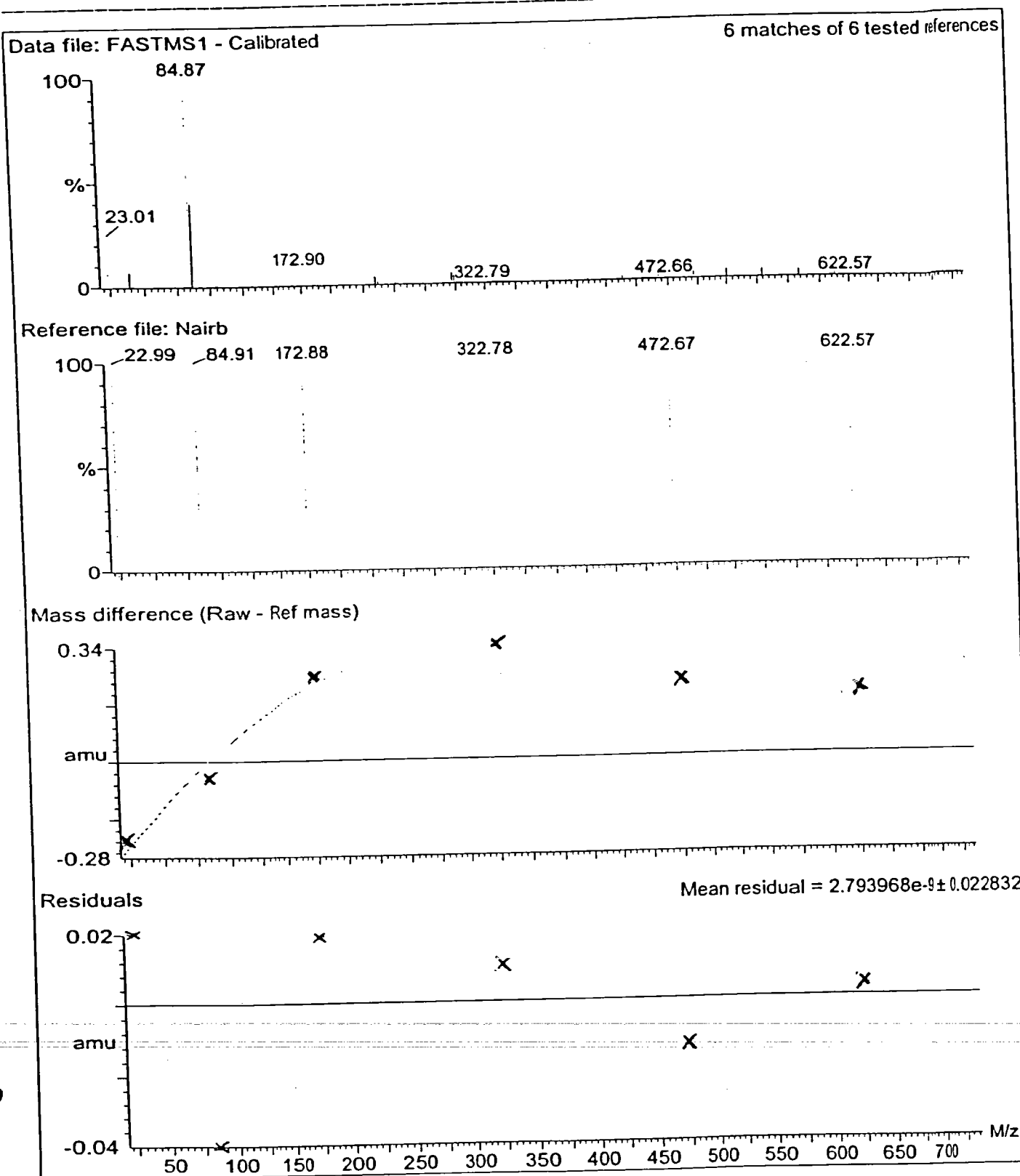
Mean residual = $-1.396984 \times 10^{-9} \pm 0.021913$



Calibration Report - MS1 Scan Speed Compensation

Page 1 of 1

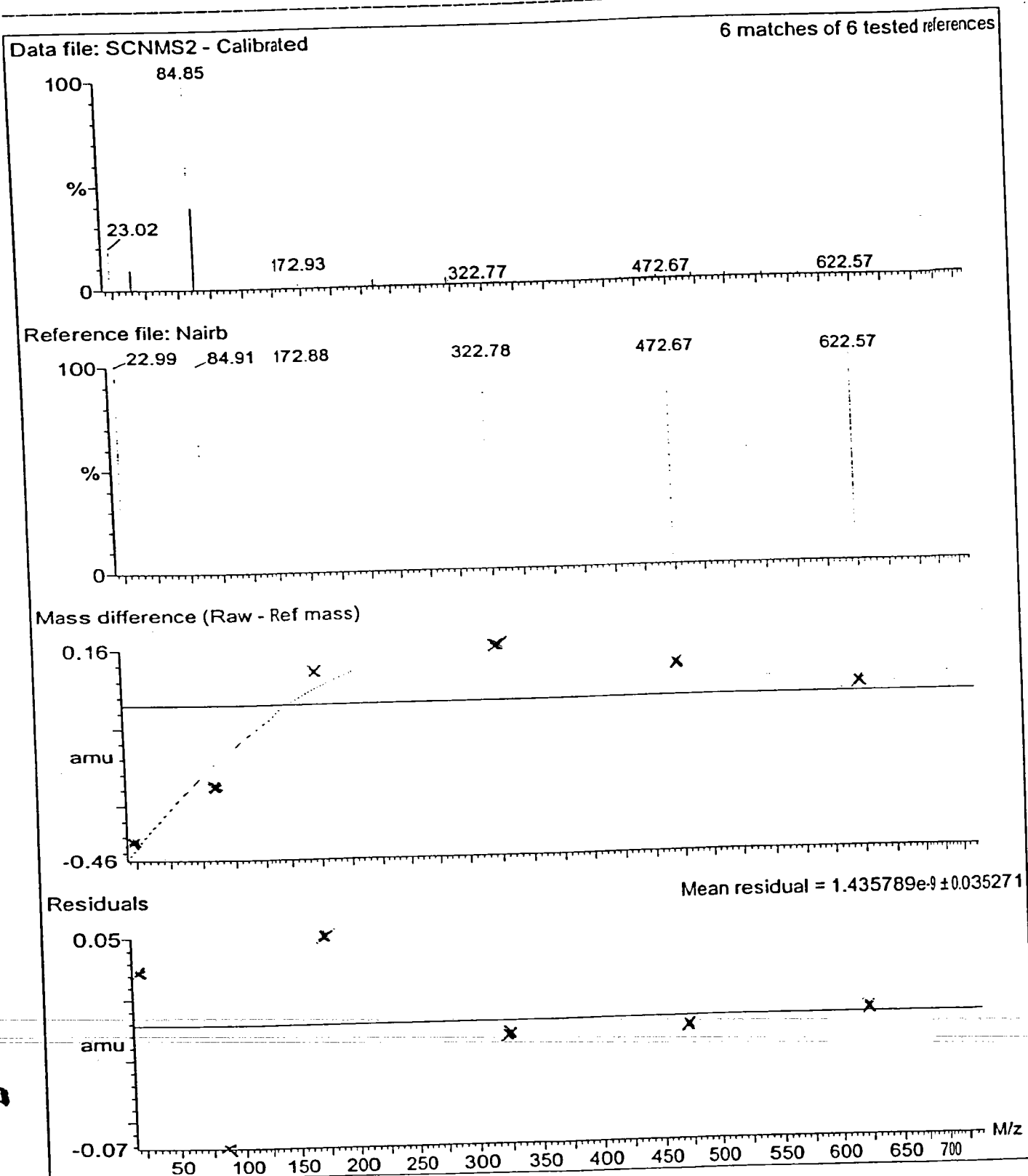
Printed: Tue Aug 19 14:52:15 2003



76

Calibration Report - MS2 Scanning

Printed: Tue Aug 19 14:54:00 2003



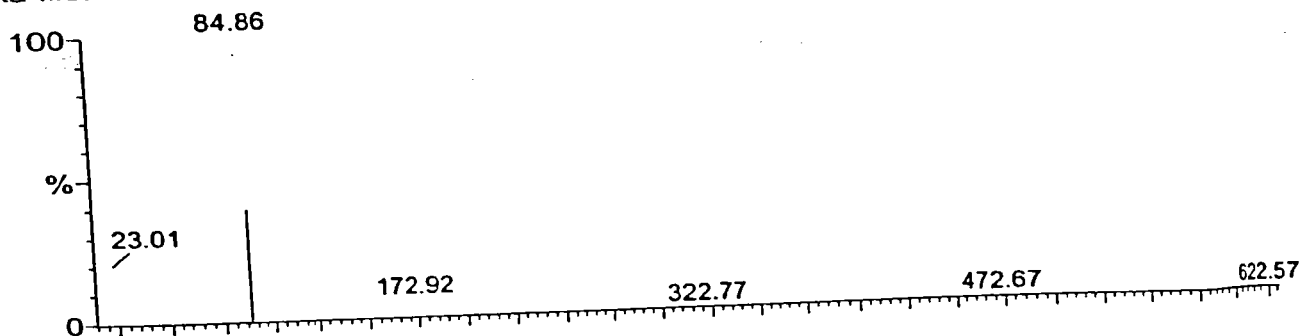
27

Calibration Report - MS2 Static

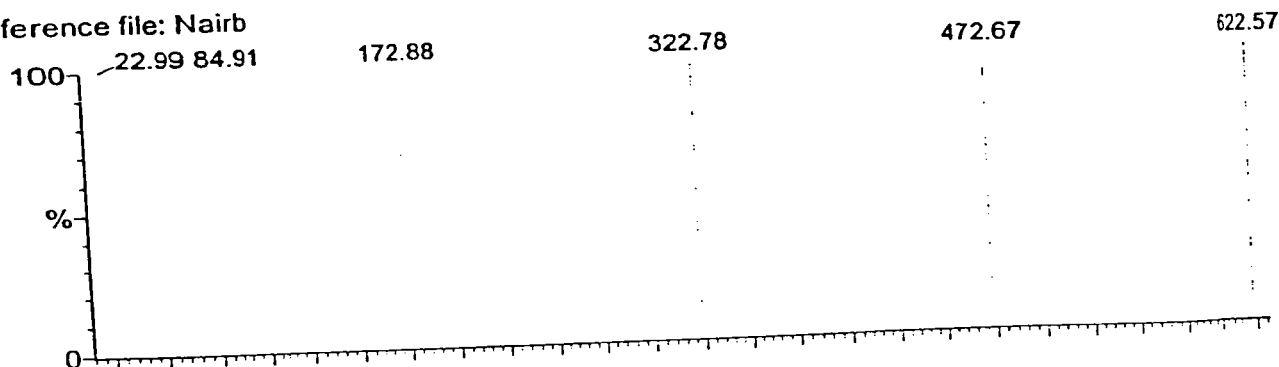
Printed: Tue Aug 19 14:53:08 2003

6 matches of 6 tested references

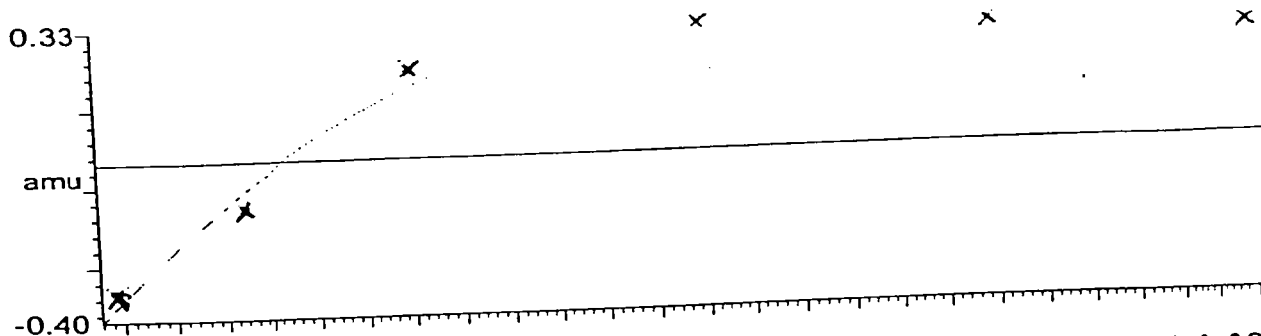
Data file: STATMS2 - Calibrated



Reference file: Nairb

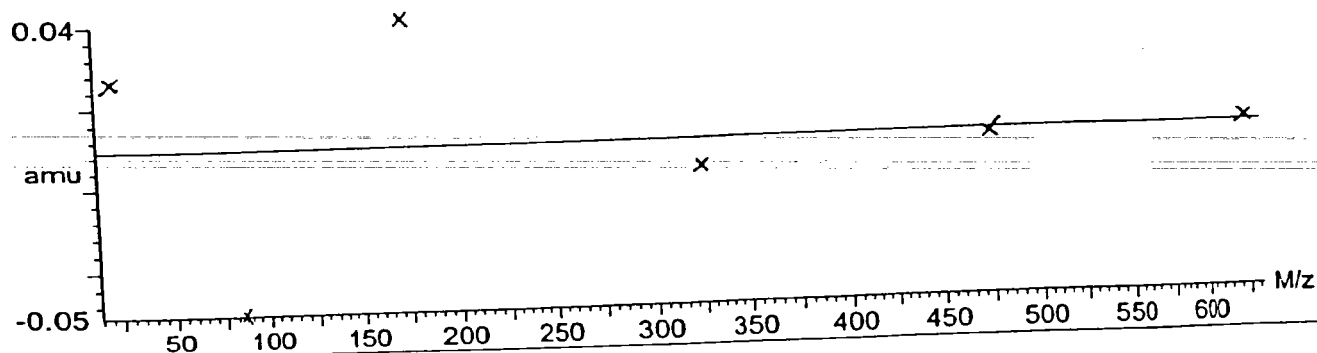


Mass difference (Raw - Ref mass)



Mean residual = $-1.396984 \times 10^{-9} \pm 0.027815$

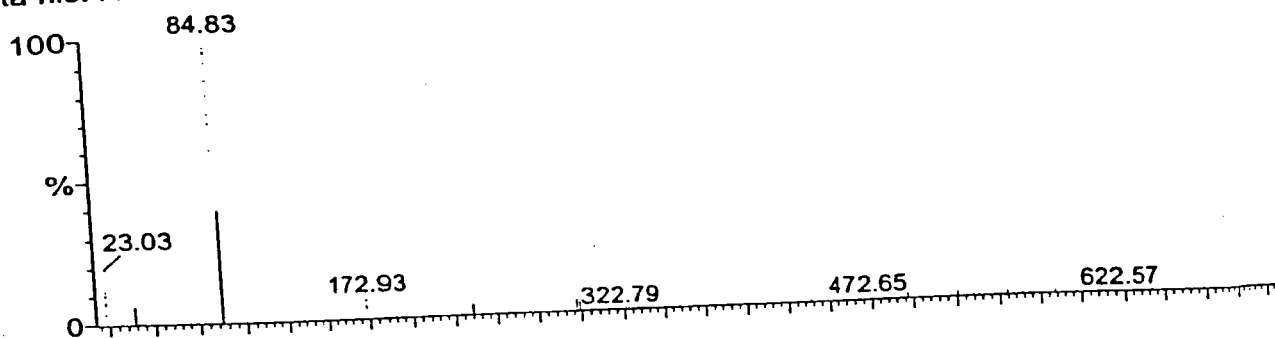
Residuals



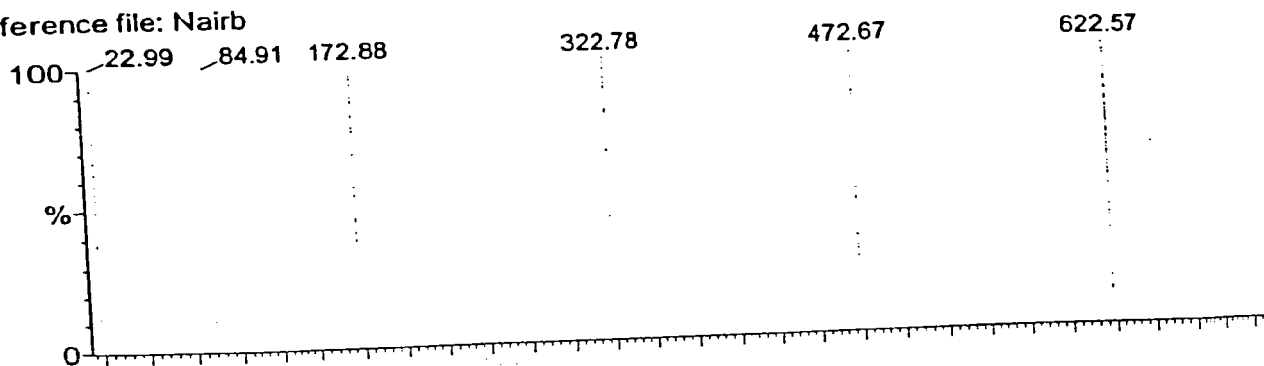
Printed: Tue Aug 19 14:54:55 2003

6 matches of 6 tested references

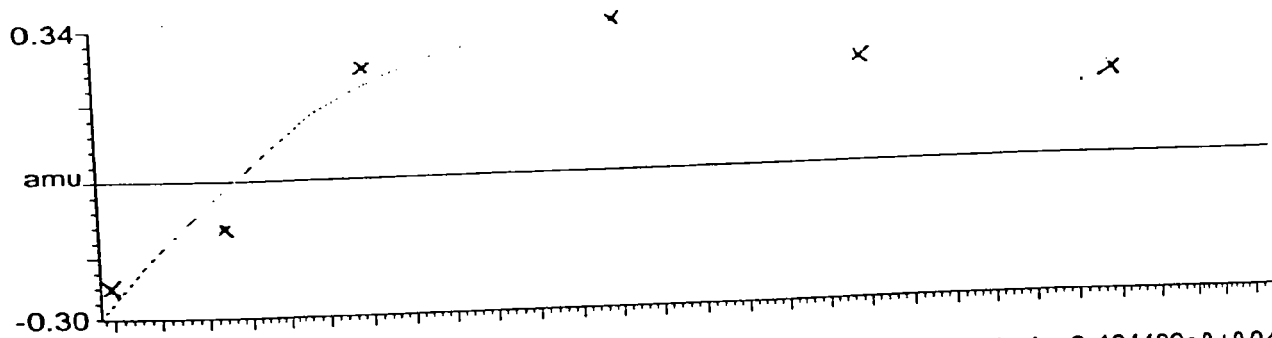
Data file: FASTMS2 - Calibrated



Reference file: Nairb

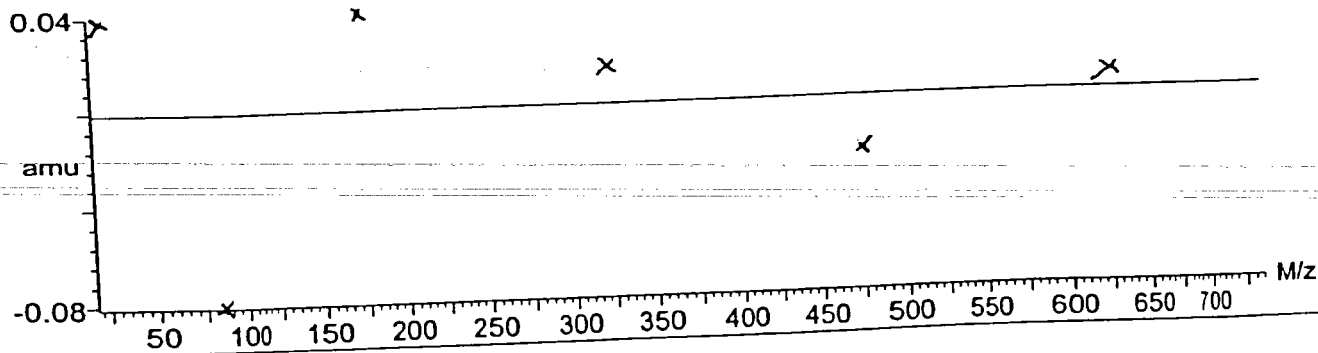


Mass difference (Raw - Ref mass)



Mean residual = $3.104409e-9 \pm 0.043735$

Residuals



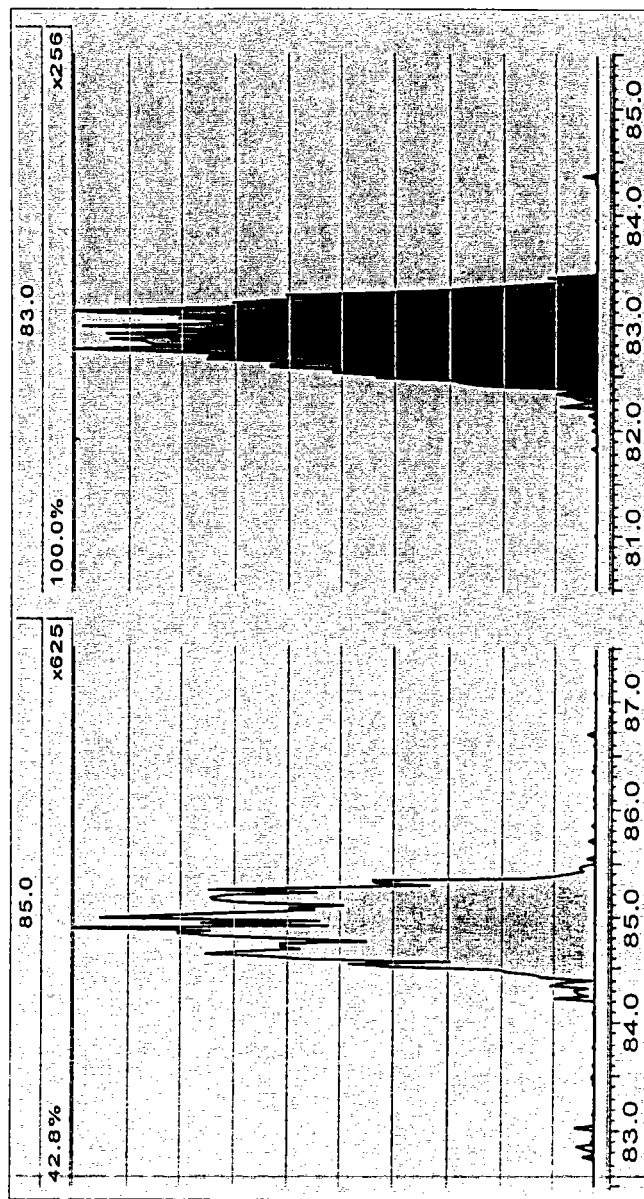
79

Page 1

Quattro Micro Tune Parameters

Parameter File: C:\MASSLYNX\NEW_PER.PRO\ACQUDB\perchlorate04.IPR

Printed : Thu Aug 12 10:38:48 2004

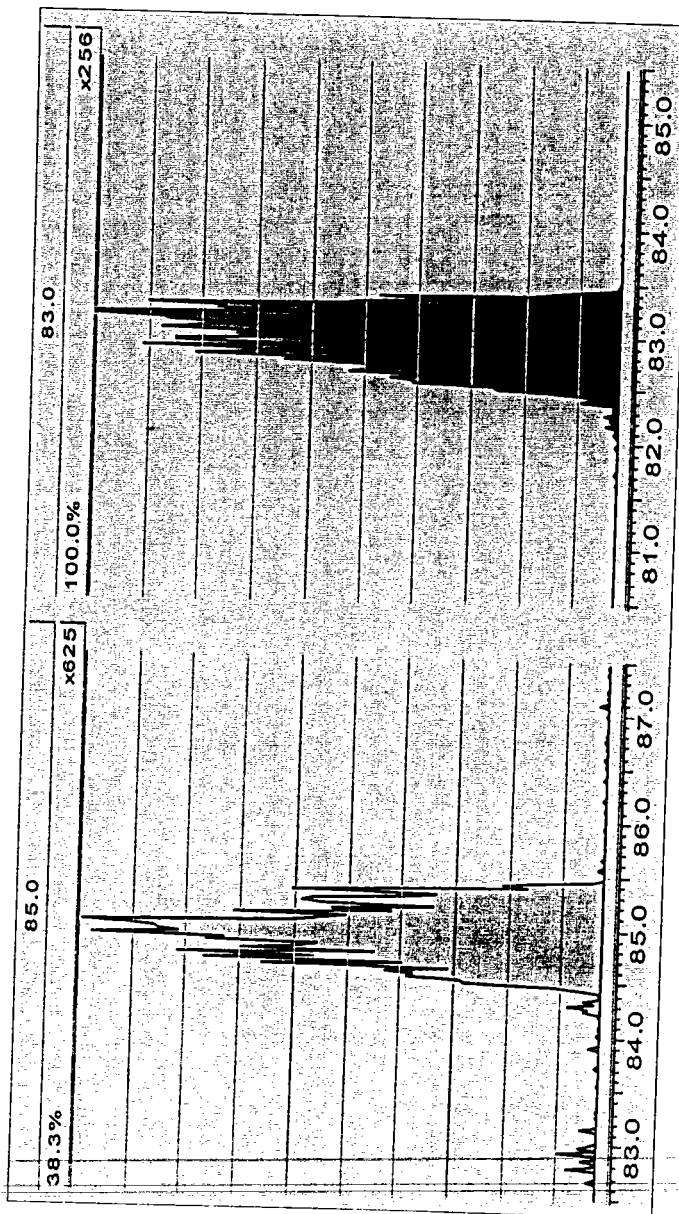


Page 1

Quattro Micro Tune Parameters

Parameter File: C:\MASSLYNX\NEW_PER.PRO\ACQUDB\perchlorate04.IPR

Printed : Fri Aug 13 08:06:02 2004



P perchlorate RT Standard Area Summary

GEL Job No.(SDG): 118884

Lab Name: General Engineering Laboratories

Lab Code: GEL

Instrument ID: LCMSMS Run Date: 12-AUG-04

HPLC Column: Phenomenex Ion Pac AG-16 2 X 50 mm

	Retention Time Marker (Area)	RT(min)	Q
mid-level Standard	1856.14	3.44	
Upper Limit	3712.28	3.94	
Lower Limit	928.07	2.94	
118884001	1957.65	2.88	*
118884002	1828.89	2.88	*
118884005	1666.14	2.94	
1200682086	2085.05	3.32	
1200682087	1680.61	2.91	*
1200682088	1900.66	2.97	
1200682089	2090.77	3.31	
1200682090	1963.04	2.49	

Form 8

Perchlorate RT Standard Area Summary

Lab Name: General Engineering Laboratories GEL Job No.(SDG): 118884

Lab Code: GEL

Instrument ID: LCMSMS Run Date: 13-AUG-04

HPLC Column: Phenomenex Ion Pac AG-16 2 X 50 mm

	Retention Time Marker (Area)	RT(min)	Q
mid-level Standard	1846.2	3.32	
Upper Limit	3692.4	3.82	
Lower Limit	923.1	2.82	
118884003	1445.1	3.25	
118884004	1915.27	3.02	
118884006	1574.64	3.04	

SAMPLE DATA

Perchlorate Analysis Data Sheet

Lab Name: General Engineering Laboratories
 Lab Code: GEL
 Instrument: LCMSMS
 Method: SW846 8321A Modified
 Matrix: WATER
 Extraction Batch ID: 356965
 Extraction Type: Filter/DAI
 Sample Volume/Weight: 10.0 mL
 Concentrated Extract Volume: 10.0
 Client Sample No. RW0804-658-LakeviewDr
 Date Received: 11-AUG-04
 GEL Job No (SDG): 118884
 GEL Sample ID: 118884001
 Date Filtered: 12-AUG-04
 Injection Volume (uL): 50
 % Solids:

CAS No.	Analyte [^]	MDL	RL	Conc*	Units	Q	Dilution Factor	Date Analyzed	GEL File ID
14797-73-0	Perchlorate	.05	.2	0.254	ug/L		1.00	12-AUG-04 21:07	per08120043a

[^] When the analyte name is Perchlorate Isotope Ratio the concentration is a unitless value calculated from the ratio of Perchlorate peak area to Perchlorate-101 peak area. The Perchlorate-101 and isotopic ratio results are provided for qualitative purposes only. The results are used to verify the presence and quantitation of Perchlorate.

*Concentration = $\frac{\text{Concentrated Extract Volume}}{\text{Instrument Value} \times \text{Aliquot}} \times \frac{1}{\% \text{Solids}}$

Quantify Sample Report
General Engineering Labs, LLC., Analyst : Janice Willey

Dataset: C:\MASSLYNX\New_Per\PRO\per081204a.qld, Time: Fri Aug 13 07:51:42 2004

Name: C:\MASSLYNX\NEW_PER\PRO\Data\per08120043a

Date: 12-Aug-2004

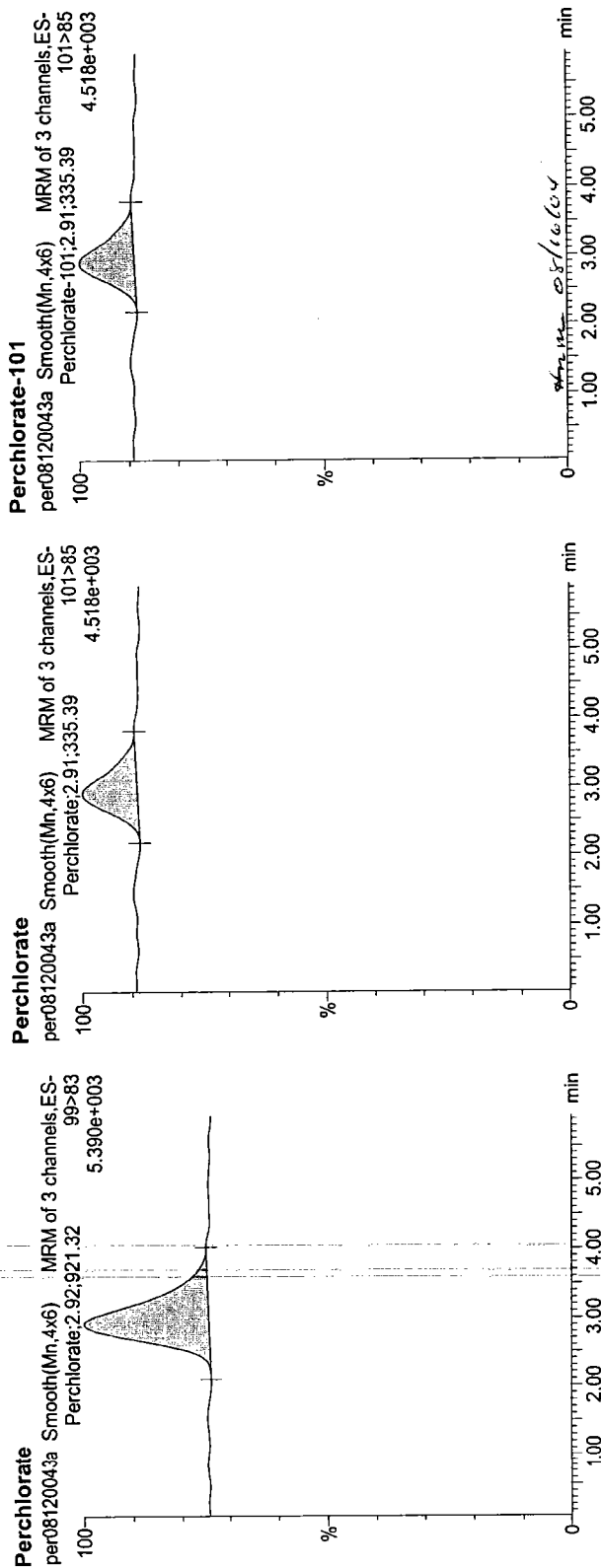
Time: 21:07:44

ID: 118884001

Vial: 2:5,D

User:

1111101ACT 356964

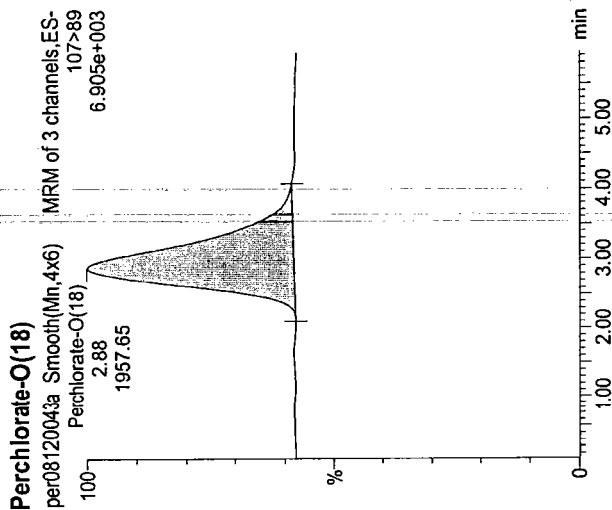


9811014

MM= Manually Modified

Quantify Sample Report
General Engineering Labs, LLC., Analyst: Janice Willey

Dataset: C:\MASSLYNX\New_Per.PRO\per081204a.qld, Time: Fri Aug 13 07:51:42 2004



8/16/04

# ID	Name	Trace	RT	Area	IS Area	Abs. Resp	Response	Flags	Mod.D.	Mod.TI...	S/N	Conc.	%Rec	Ratio
1 118884001	Perchlorate	99>83	2.92	921.319	921.319	921.319	921.319	bb			144.1	0.2537		2.75
2 118884001	Perchlorate-101	101>85	2.91	335.389	335.389	335.389	335.389	bb			28.1	0.2508		
3 118884001	Perchlorate-O(18)	107>89	2.88	1957.645	1957.645	1957.645	1957.645	bb			114.4	0.5107	102.1	

✓

11H2O1ACT/356966

9/8/04

Perchlorate Analysis Data Sheet

Client Sample No.
RW0804-653-LakeviewDr

Date Received: 11-AUG-04

GEL Job No (SDG): 118884

GEL Sample ID: 118884002

Date Filtered: 12-AUG-04

Injection Volume (uL): 50

% Solids:

Lab Name: General Engineering Laboratories

Lab Code: GEL

Instrument: LCMSMS

Method: SW846 8321A Modified

Matrix: WATER

Extraction Batch ID: 356965

Extraction Type: Filter/DAI

Sample Volume/Weight: 10.0 mL

Concentrated Extract Volume: 10.0

CAS No.	Analyte [^]	MDL	RL	Conc*	Units	Q	Dilution Factor	Date Analyzed	GEL File ID
14797-73-0	Perchlorate	.05	.2	0.335	ug/L		1.00	12-AUG-04 21:28	per08120046a

[^] When the analyte name is Perchlorate Isotope Ratio the concentration is a unitless value calculated from the ratio of Perchlorate peak area to Perchlorate-101 peak area. The Perchlorate-101 and isotopic ratio results are provided for qualitative purposes only. The results are used to verify the presence and quantitation of Perchlorate.

*Concentration = $\frac{\text{Instrument Value} \times \text{Concentrated Extract Volume}}{\text{Aliquot}}$ X $\frac{1}{\% \text{Solids}}$

Quantify Sample Report
General Engineering Labs, LLC., Analyst : Janice Willey

Dataset: C:\MASSLYNX\New_Per.PRO\per081204a.qld, Time: Fri Aug 13 07:51:42 2004

Name: C:\MASSLYNX\NEW_PER.PRO\Data\per08120046a

Date: 12-Aug-2004

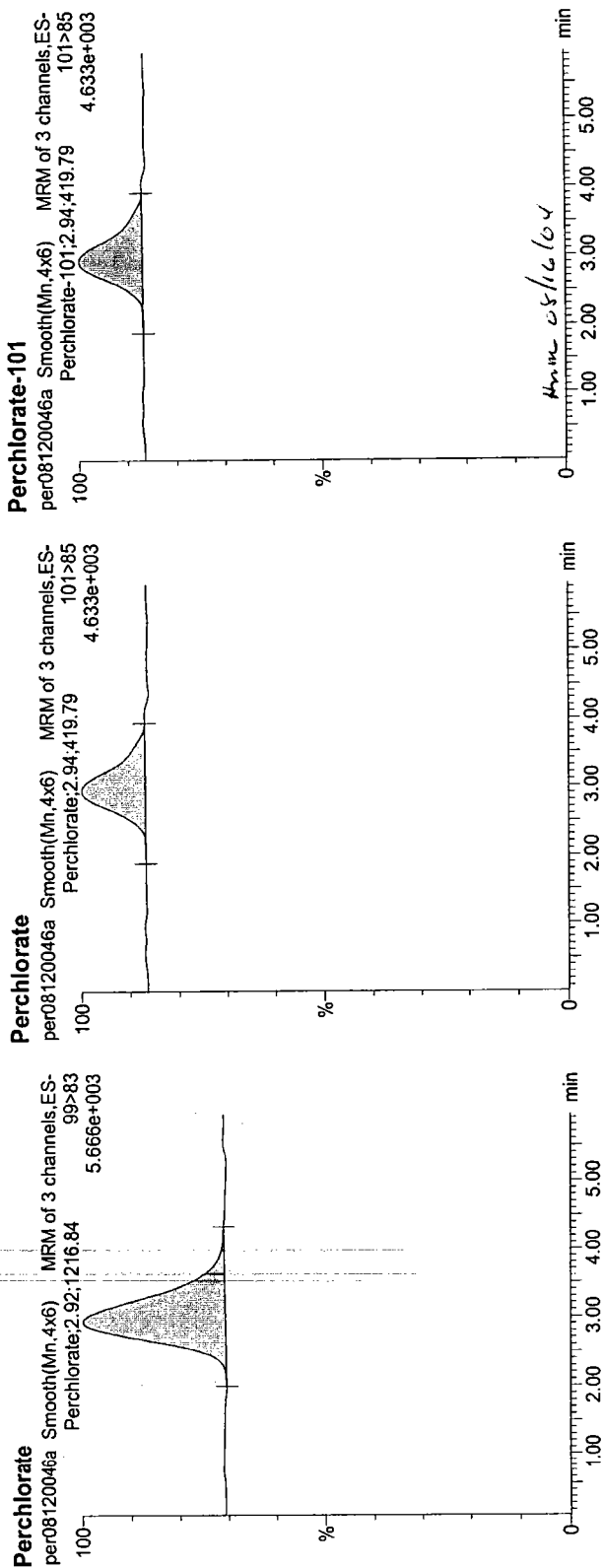
Time: 21:28:43

ID: 118884002

Vial: 2:6,A

User:

11/12/04 ACTU 1356964

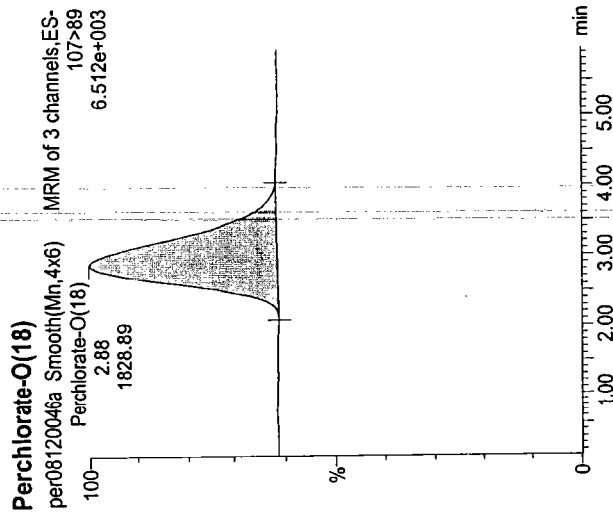


9811614

MM= Manually Modified

Quantify Sample Report
General Engineering Labs, LLC., Analyst : Janice Willey

Dataset: C:\MASSLYNX\New_Per.PRO\per081204a.qld, Time: Fri Aug 13 07:51:42 2004



# ID	Name	Trace	RT	Area	IS Area	Abs. Resp	Response	Flags	Mod.D...	Mod.TI...	S/N	Conc.	%Rec	Ratio
1	118884002	Perchlorate	99>83	1216.838	1216.838	1216.838	1216.838	bb			252.4	0.3350	2.90	
2	118884002	Perchlorate-101	101>85	419.791	419.791	419.791	419.791	bb			83.5	0.3140		
3	118884002	Perchlorate-O(18)	107>89	1828.885	1828.885	1828.885	1828.885	bb			340.9	0.4771	95.4	✓

trans-osthelen

ACT 11/14/01 356966

281.014

Perchlorate Analysis Data Sheet

Lab Name: General Engineering Laboratories

Lab Code: GEL

Instrument: LCMSMS

Method: SW846 8321A Modified

Matrix: WATER

Extraction Batch ID: 356965

Extraction Type: Filter/DAI

Sample Volume/Weight: 10.0 mL

Concentrated Extract Volume: 10.0

Client Sample No.

RW0804-652-LakeviewDr

Date Received: 11-AUG-04

GEL Job No (SDG): 118884

GEL Sample ID: 118884003

Date Filtered: 12-AUG-04

Injection Volume (uL): 50

%Solids:

CAS No.	Analyte [^]	MDL	RL	Conc*	Units	Q	Dilution Factor	Date Analyzed	GEL File ID
14797-73-0	Perchlorate	.5	2	3.94	ug/L		10.0	13-AUG-04 11:22	per08130026a

[^] When the analyte name is Perchlorate Isotope Ratio the concentration is a unitless value calculated from the ratio of Perchlorate peak area to Perchlorate-101 peak area. The Perchlorate-101 and isotopic ratio results are provided for qualitative purposes only. The results are used to verify the presence and quantitation of Perchlorate.

*Concentration =

$$\text{Instrument Value} \times \frac{\text{Concentrated Extract Volume}}{\text{Aliquot}} \times \frac{1}{\% \text{Solids}}$$

Quantify Sample Report

General Engineering Labs, LLC., Analyst : Janice Willey

Dataset: C:\MASSLYNX\New_Per.PRO\per081304a.qld, Time: Fri Aug 13 12:57:37 2004

Name: C:\MASSLYNX\NEW_PER.PRO\Data\per08130026a

Date: 13-Aug-2004

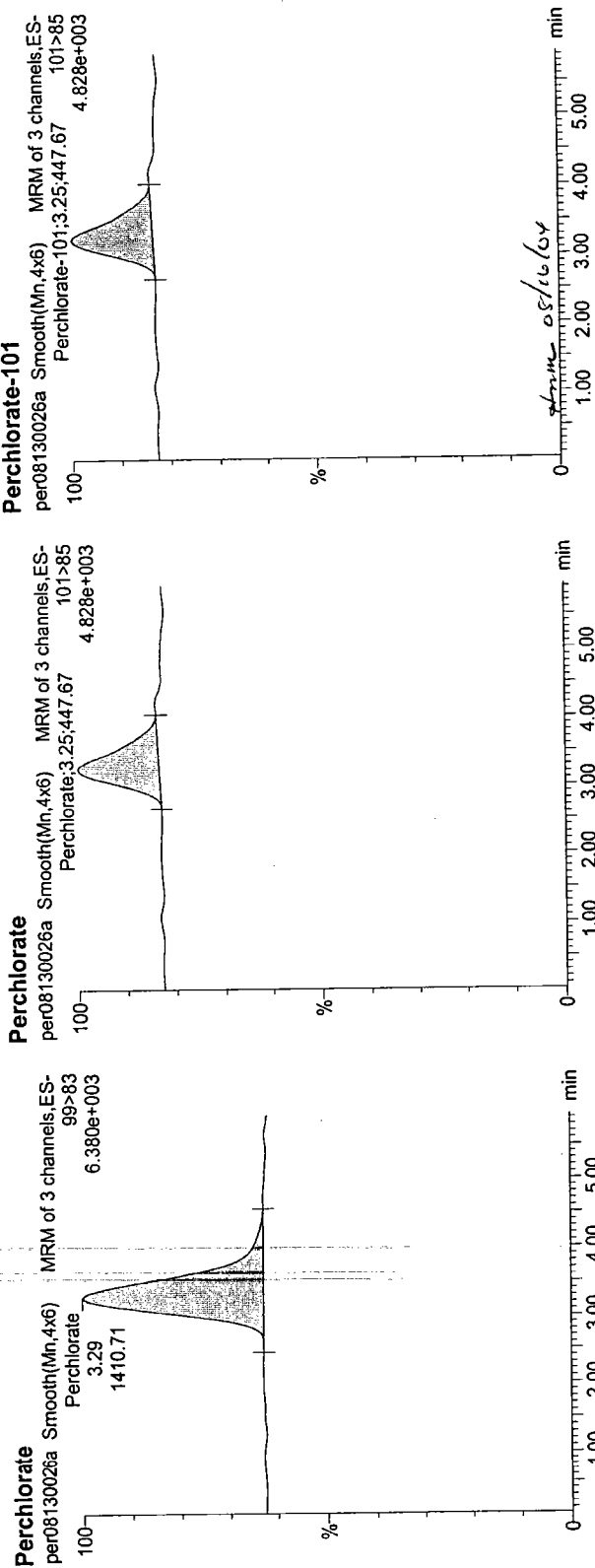
Time: 11:22:39

ID: 118884003

Vial: 2:2,F

User:

10x14.21 ACT 1350964



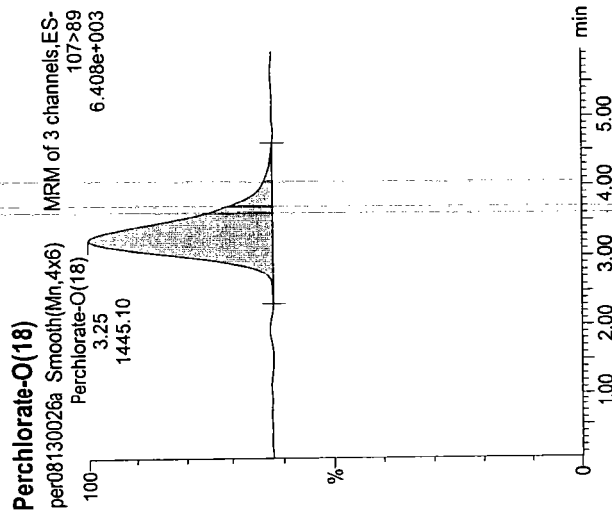
861604

MM= Manually Modified

Quantify Sample Report

General Engineering Labs, LLC., Analyst : Janice Willey

Dataset: C:\MASSLYNX\New_Per.PRO\per081304a.qld, Time: Fri Aug 13 12:57:37 2004



# ID	Name	Trace	RT	Area	IS Area	Abs.Resp	Response	Flags	Mod.D.	Mod.T.	S/N	Conc.	%Rec	Ratio
1	118884003	Perchlorate	99>83	3.29	1410.715	1410.715	1410.715	bb			250.6	0.3936		3.15
2	118884003	Perchlorate-101	101>85	3.25	447.666	447.666	447.666	bb			50.0	0.3580		
3	118884003	Perchlorate-O(18)	107>89	3.25	1445.102	1445.102	1445.102	bb			471.7	0.4078	81.6	

Sum = 0.81664

10x1H2O1A(12) 356966

9811614

Perchlorate Analysis Data Sheet

Client Sample No. RWB0804-3536-FletchersWay
 Lab Name: General Engineering Laboratories
 Lab Code: GEL
 Instrument: LCMSMS
 Method: SW846 8321A Modified
 Matrix: WATER
 Extraction Batch ID: 356965
 Extraction Type: Filter/DAI
 Sample Volume/Weight: 10.0 mL
 Concentrated Extract Volume: 10.0
 Date Received: 11-AUG-04
 GEL Job No (SDG): 118884
 GEL Sample ID: 118884004
 Date Filtered: 12-AUG-04
 Injection Volume (uL): 50
 % Solids:

CAS No.	Analyte [^]	MDL	RL	Conc*	Units	Q	Dilution Factor	Date Analyzed	GEL File ID
14797-73-0	Perchlorate	.05	.2	0.050	ug/L	U	1.00	13-AUG-04 11:29	per08130027a

[^] When the analyte name is Perchlorate Isotope Ratio the concentration is a unitless value calculated from the ratio of Perchlorate peak area to Perchlorate-101 peak area. The Perchlorate-101 and isotopic ratio results are provided for qualitative purposes only. The results are used to verify the presence and quantitation of Perchlorate.

*Concentration =

$$\frac{\text{Instrument Value} \times \text{Concentrated Extract Volume}}{\text{Aliquot} \times \% \text{Solids}}$$

Quantify Sample Report

General Engineering Labs, LLC., Analyst : Janice Willey

Dataset: C:\MASSLYNX\New_Per.PRO\per081304a.qld, Time: Fri Aug 13 12:57:37 2004

Name: C:\MASSLYNX\NEW_PER.PRO\Data\per08130027a

Date: 13-Aug-2004

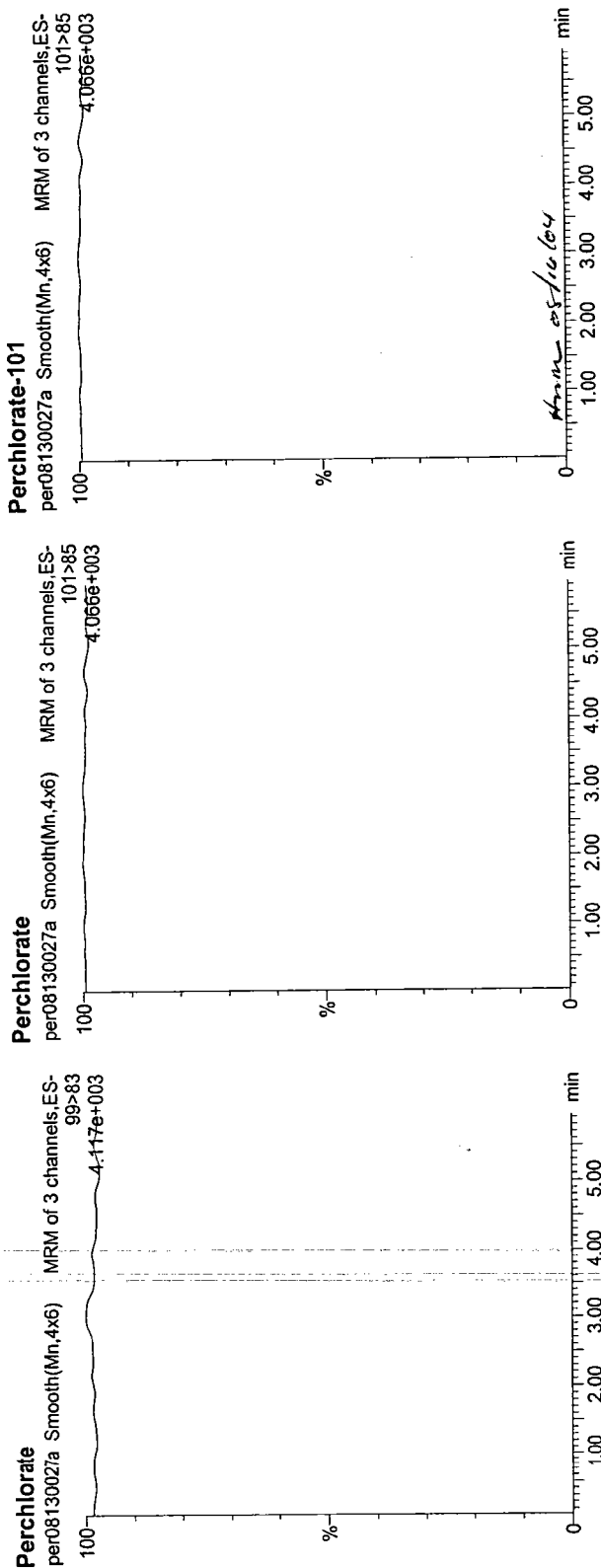
Time: 11:29:38

ID: 118884004

Vial: 2:3,A

User:

11/14/2013 509661 ACTL

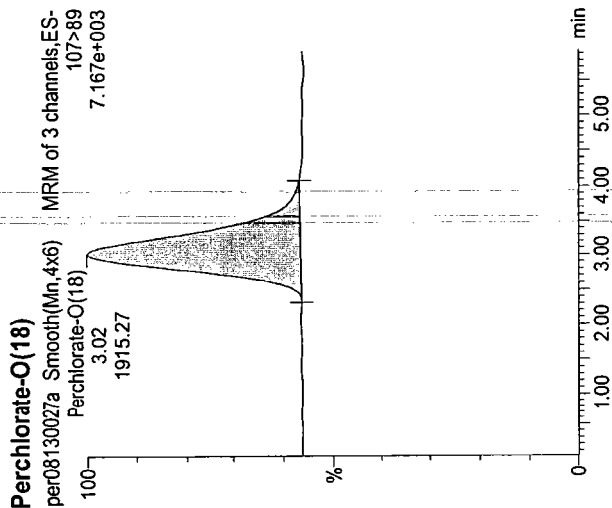


8/11/04

MM= Manually Modified

General Engineering Labs, LLC., Analyst : Janice Willey

Dataset: C:\MASSLYNX\New_Per.PRO\per081304a.qld, Time: Fri Aug 13 12:57:37 2004



#	ID	Name	Trace	RT	Area	IS Area	Abs Resp	Response	Flags	Mod.D...	Mod.T...	S/N	Conc.	%Rec	Ratio
1	118884004	Perchlorate	99>83												
2	118884004	Perchlorate-101	101>85												
3	118884004	Perchlorate-O(18)	107>89	3.02	1915.274		1915.274	1915.274	bb			574.8	0.5405	108.1	

4th run 08/16/04

11 H₂O / 3509666 / ACTU

8/16/17

MM= Manually Modified

Perchlorate Analysis Data Sheet

Lab Name: General Engineering Laboratories

Lab Code: GEL

Instrument: LCMSMS

Method: SW846 8321A Modified

Matrix: WATER

Extraction Batch ID: 356965

Extraction Type: Filter/DAI

Sample Volume/Weight: 10.0 mL

Concentrated Extract Volume: 10.0

Client Sample No.

RW0804-NCNG

Date Received: 11-AUG-04

GEL Job No (SDG): 118884

GEL Sample ID: 118884005

Date Filtered: 12-AUG-04

Injection Volume (uL): 50

%Solids:

CAS No.	Analyte [^]	MDL	RL	Conc*	Units	Q	Dilution Factor	Date Analyzed	GEL File ID
14797-73-0	Perchlorate	.05	.2	0.294	ug/L		1.00	12-AUG-04 21:49	per08120049a

[^] When the analyte name is Perchlorate Isotope Ratio the concentration is a unitless value calculated from the ratio of Perchlorate peak area to Perchlorate-101 peak area. The Perchlorate-101 and isotopic ratio results are provided for qualitative purposes only. The results are used to verify the presence and quantitation of Perchlorate.

*Concentration =

$$\frac{\text{Instrument Value} \times \text{Concentrated Extract Volume}}{\text{Aliquot}} \times \frac{1}{\% \text{Solids}}$$

Dataset: C:\MASSLYNX\New_Per.PRO\per081204a.qld, Time: Fri Aug 13 07:51:42 2004

Name: C:\MASSLYNX\NEW_PER.PRO\Data\per08120049a

Date: 12-Aug-2004

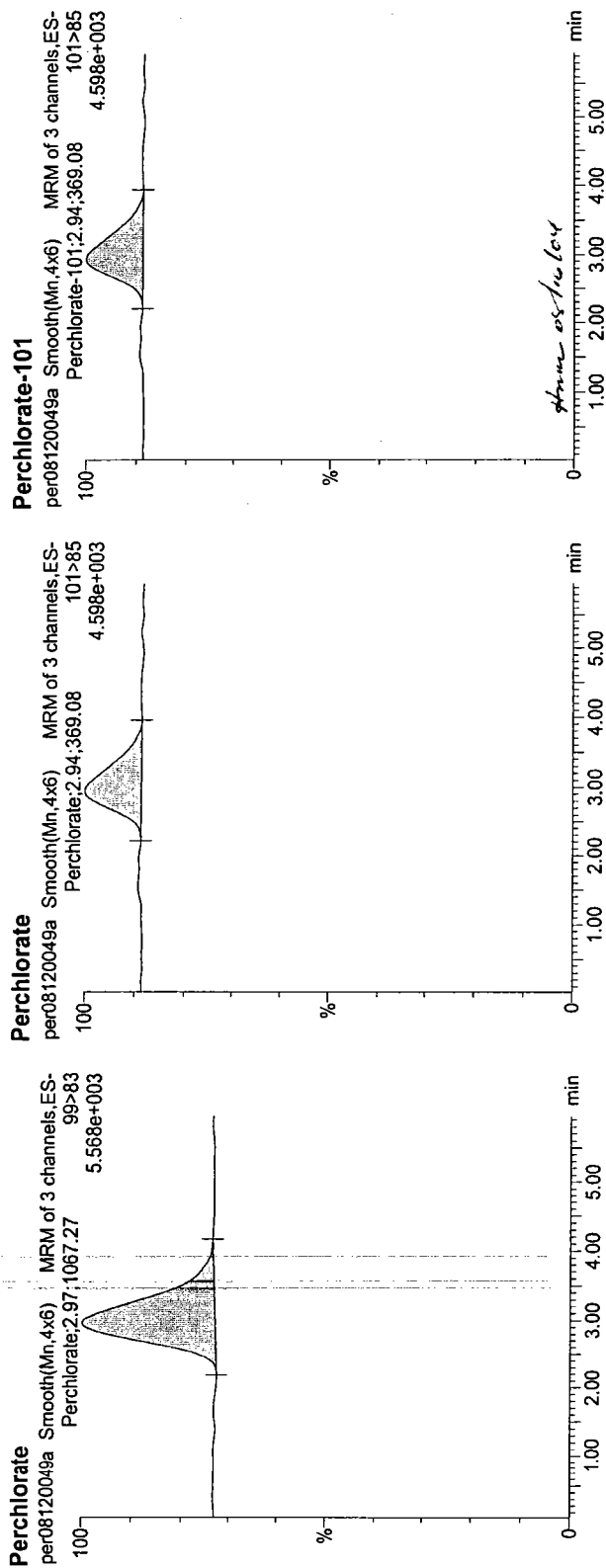
Time: 21:49:42

ID: 118884005

Vial: 2:6.D

User:

11/14/20/ACT/356964



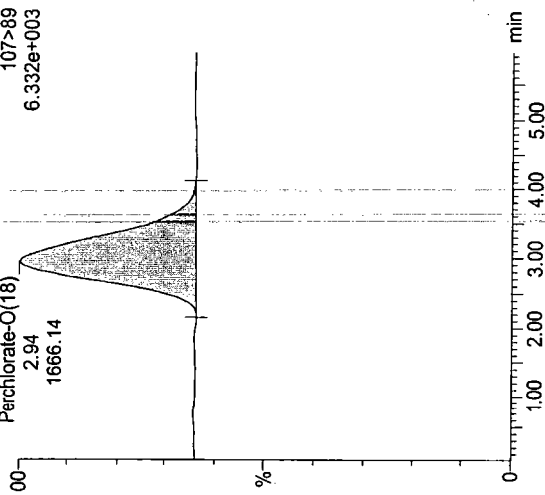
gslm

Quantify Sample Report
General Engineering Labs, LLC., Analyst : Janice Willey

Dataset: C:\MASSLYNX\New_Per.PRO\per081204a.qld, Time: Fri Aug 13 07:51:42 2004

Perchlorate-O(18)

per081204a Smooth(Mn,4x6) MRM of 3 channels,ES-
Perchlorate-O(18) 107>89
2.94 6.332e+003
1666.14



#	ID	Name	Trace	RT	Area	IS Area	Abs. Resp	Response	Flags	Mod. ID	Mod. TI	S/N	Conc.	%Rec	Ratio
1	118884005	Perchlorate	99>83	2.97	1067.274		1067.274	1067.274	bb			78.3	0.2938		2.89
2	118884005	Perchlorate-101	101>85	2.94	369.080		369.080	369.080	bb			36.0	0.2760		
3	118884005	Perchlorate-O(18)	107>89	2.94	1666.139		1666.139	1666.139	bb			225.4	0.4346		86.9

amine as-is

11H2013569661ACT

8/11/04

Perchlorate Analysis Data Sheet

Lab Name: General Engineering Laboratories

Lab Code: GEL

Instrument: LCMSMS

Method: SW846 8321A Modified

Matrix: WATER

Extraction Batch ID: 356965

Extraction Type: Filter/DAI

Sample Volume/Weight: 10.0 mL

Concentrated Extract Volume: 10.0

Client Sample No.

RW0804-FieldDup1

Date Received: 11-AUG-04

GEL Job No (SDG): 118884

GEL Sample ID: 118884006

Date Filtered: 12-AUG-04

Injection Volume (uL): 50

% Solids:

CAS No.	Analyte [^]	MDL	RL	Conc*	Units	Q	Dilution Factor	Date Analyzed	GEL File ID
14797-73-0	Perchlorate	.05	.2	0.291	ug/L		1.00	13-AUG-04 11:36	per08130028a

[^] When the analyte name is Perchlorate Isotope Ratio the concentration is a unitless value calculated from the ratio of Perchlorate peak area to Perchlorate-101 peak area. The Perchlorate-101 and isotopic ratio results are provided for qualitative purposes only. The results are used to verify the presence and quantitation of Perchlorate.

*Concentration =

Instrument Value X $\frac{\text{Concentrated Extract Volume}}{\text{Aliquot}}$ X $\frac{1}{\% \text{Solids}}$

Quantify Sample Report
General Engineering Labs, LLC., Analyst : Janice Willey

Dataset: C:\MASSLYNX\New_Per\PRO\per081304a.qld, Time: Fri Aug 13 12:57:37 2004

Name: C:\MASSLYNX\NEW_PER\PRO\Data\per08130028a

Date: 13-Aug-2004

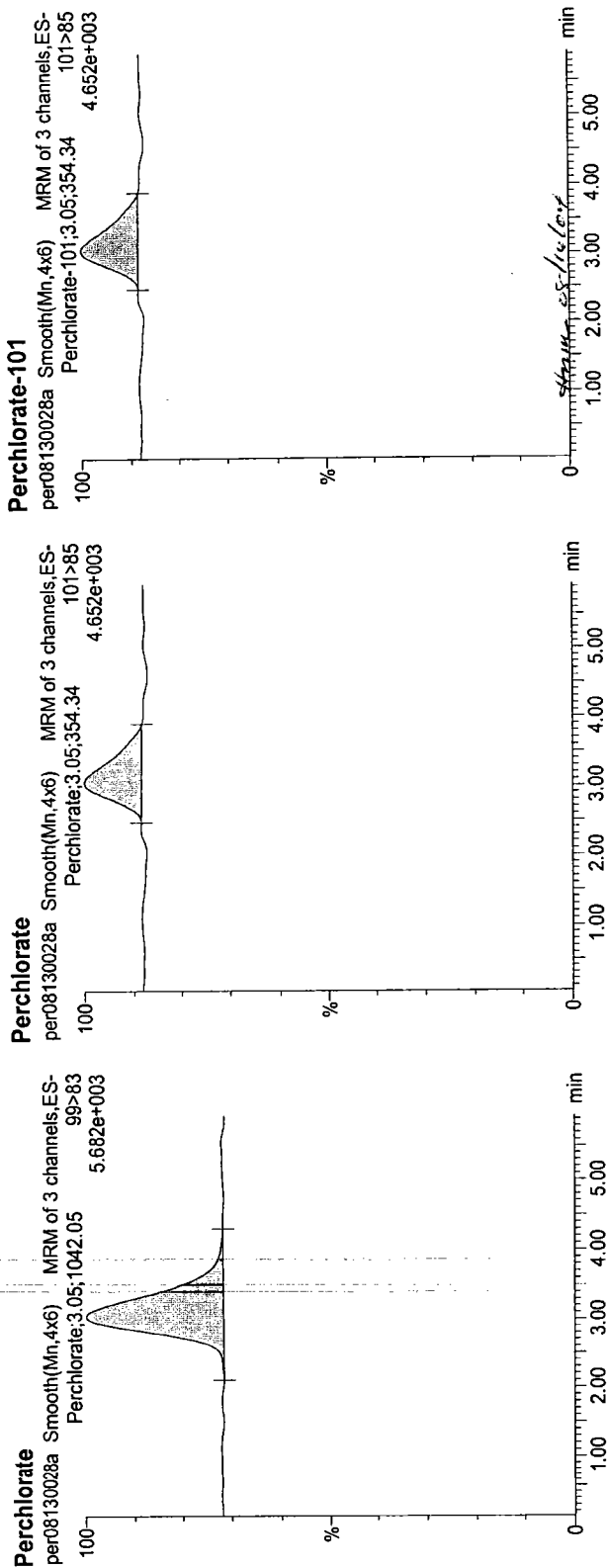
Time: 11:36:37

ID: 118884006

Vial: 2:3B

User:

11/14/04 ACT 1356466

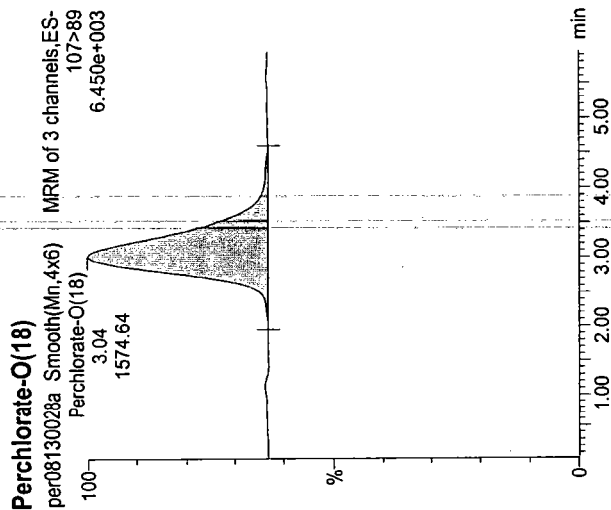


4/9/04

MM= Manually Modified

Quantify Sample Report
General Engineering Labs, LLC., Analyst : Janice Willey

Dataset: C:\MASSLYNX\New_Per.PRO\per081304a.qld, Time: Fri Aug 13 12:57:37 2004



# ID	Name	Trace	RT	Area	IS/Area	Abs:Resp	Response	Flags	Mod.D	Mod.Ti	S/N	Conc	%Rec	Ratio
1 118884006	Perchlorate	99>83	3.05	1042.053	1042.053	1042.053	1042.053	bb			187.3	0.2908		2.94
2 118884006	Perchlorate-101	101>85	3.05	354.338	354.338	354.338	354.338	bb			50.4	0.2834		
3 118884006	Perchlorate-O(18)	107>89	3.04	1574.640	1574.640	1574.640	1574.640	bb			109.4	0.4444	88.9	

from 08/16/04

ACTU 111H2O1 356966

8/16/04

STANDARDS DATA

Perchlorate Initial Calibration

Lab Name: General Engineering Laboratories GEL Job No.(SDG): 118884

Lab Code: GEL

Instrument ID: LCMSMS Date Analyzed: 12-AUG-04

HPLC Column: Phenomenex Ion Pac AG-16 2 X 50 mm

Calibration Level	1	2	3	4	5
Cal Concentration (ug/L)	0.05	0.1	0.25	0.50	1.0

Parrrname Perchlorate

Coefficient of Determination: .9993

Calibration Curve: 3632.08X + 0

Response Type: External Standard

Curve Type: Linear Null

Perchlorate Initial Calibration

Lab Name: General Engineering Laboratories GEL Job No.(SDG): 118884

Lab Code: GEL

Instrument ID: LCMSMS Date Analyzed: 12-AUG-04

HPLC Column: Phenomenex Ion Pac AG-16 2 X 50 mm

Calibration Level	1	2	3	4	5
Cal Concentration (ug/L)	0.05	0.1	0.25	0.50	1.0

Parname Perchlorate-101

Coefficient of Determination: .9968

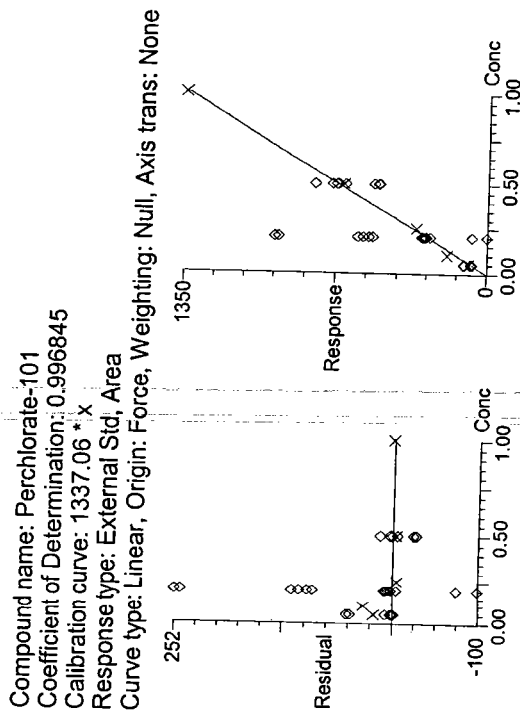
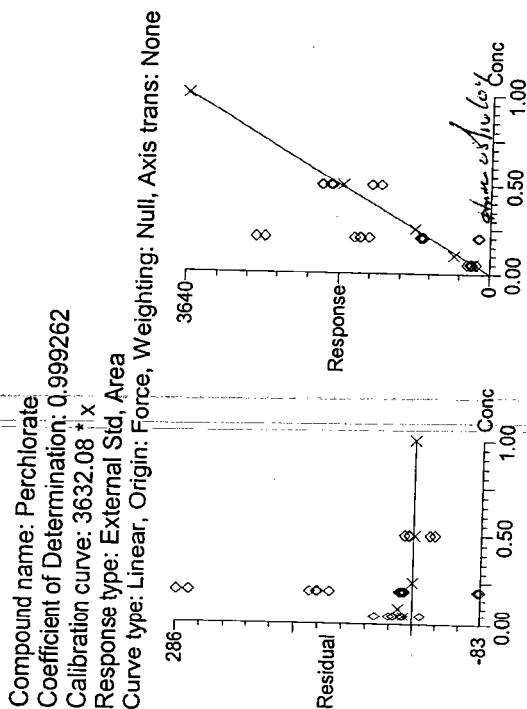
Calibration Curve: 1337.06X + 0

Response Type: External Standard

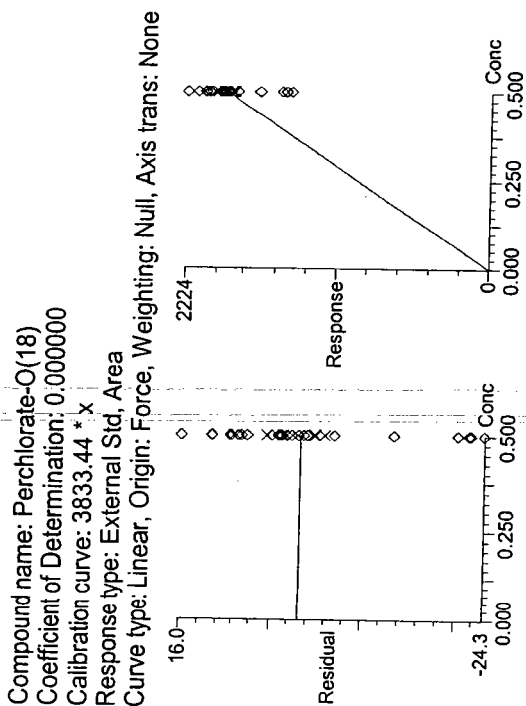
Curve Type: Linear Null

Dataset: C:\MASSLYNX\New_Per.PRO\per081204a.qld, Time: Fri Aug 13 07:51:42 2004

Method: C:\MASSLYNX\New_Per.PRO\MethDB\per081204a.mdb, Time: Thu Aug 12 14:44:30 2004
Calibration: Untitled, Time: Fri Aug 13 07:41:38 2004



MM= Manually Modified



Dataset: C:\MASSLYNX\New_Per.PRO\per081204a.qld, Time: Fri Aug 13 07:51:42 2004

Name: C:\MASSLYNX\NEW_PER.PRO\Data\per08120003a

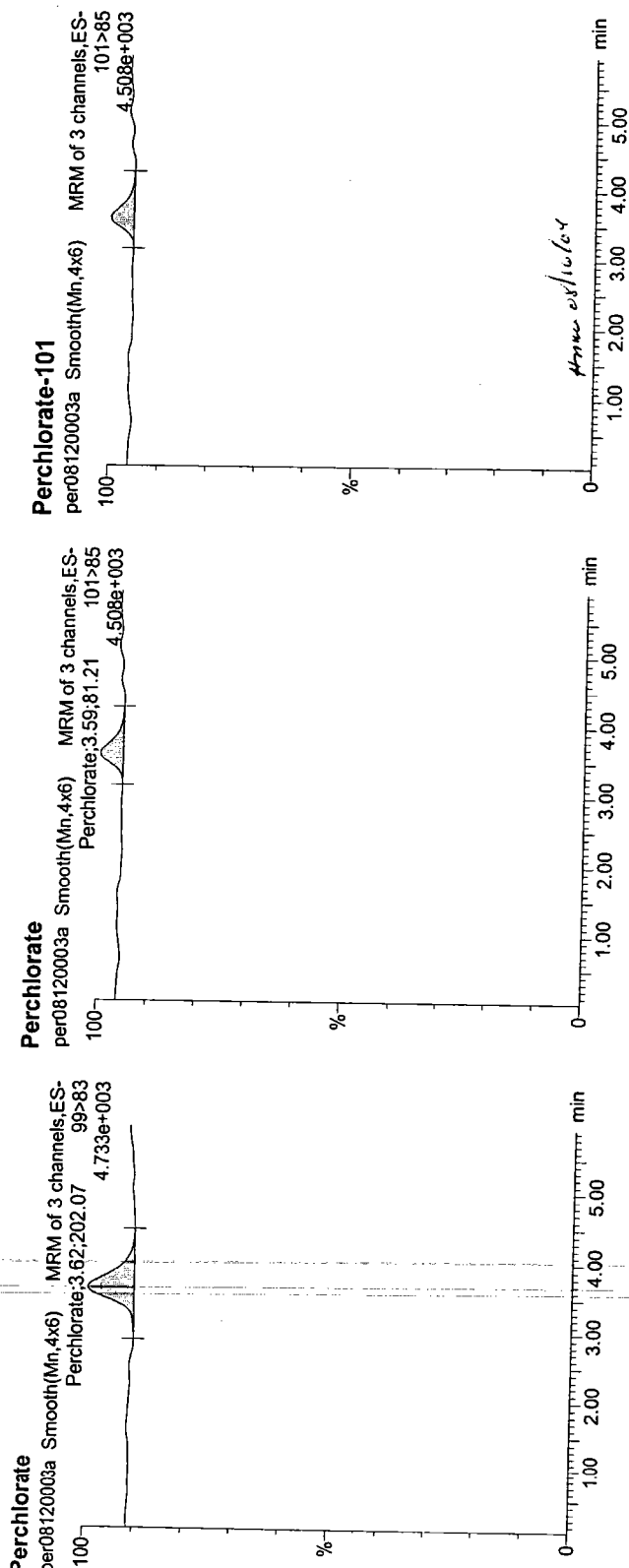
Date: 12-Aug-2004

Time: 16:22:43

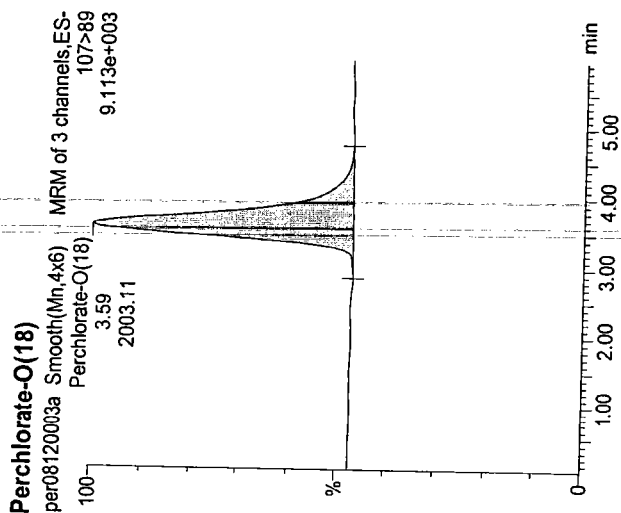
ID: WCL040803-01

Vial: 1:1,8

User:



MM= Manually Modified



# ID	Name	Trace	RT	Area	IS Area	Abs Resp	Response	Flags	Mod.D	Mod.Ti	S/N	Conc.	%Rec	Ratio
1	WCL040803-01	Perchlorate	99>83	202.073	202.073	202.073	202.073	bb			35.0	0.0556	111.3	2.49
2	WCL040803-01	Perchlorate-101	101>85	81.207	81.207	81.207	81.207	bb			21.3	0.0607	121.5	
3	WCL040803-01	Perchlorate-O(18)	107>89	2003.111	2003.111	2003.111	2003.111	bb			1730.0	0.5225	104.5	

Amu 08/13/04

8/13/04

Quantify Sample Report

General Engineering Labs, LLC., Analyst : Janice Willey

Printed: Fri Aug 13 07:53:17 2004, Page 7 of 141

Dataset: C:\MASSLYNX\New_Per.PRO\per081204a.qld, Time: Fri Aug 13 07:51:42 2004

Name: C:\MASSLYNX\NEW_PER.PRO\Data\per08120004a

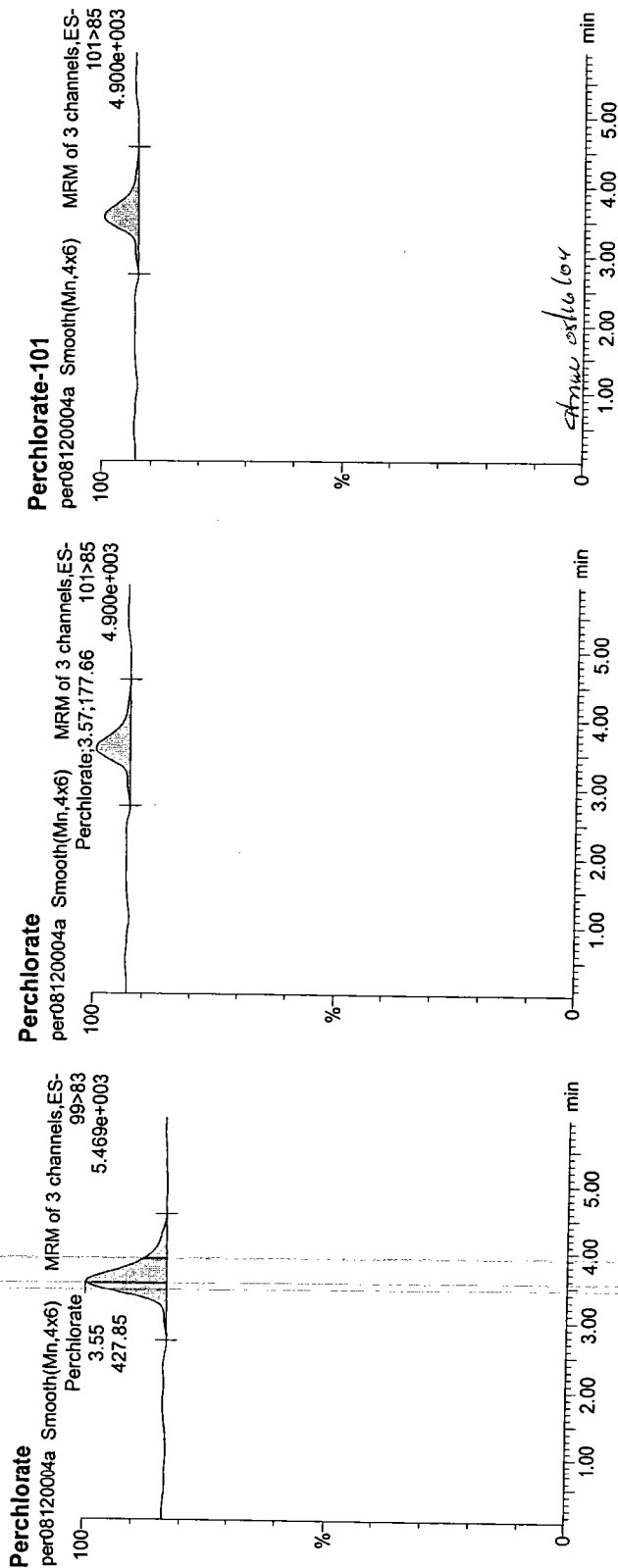
Date: 12-Aug-2004

Time: 16:29:43

ID: WCL040803-02

Vial: 1:1,C

User:

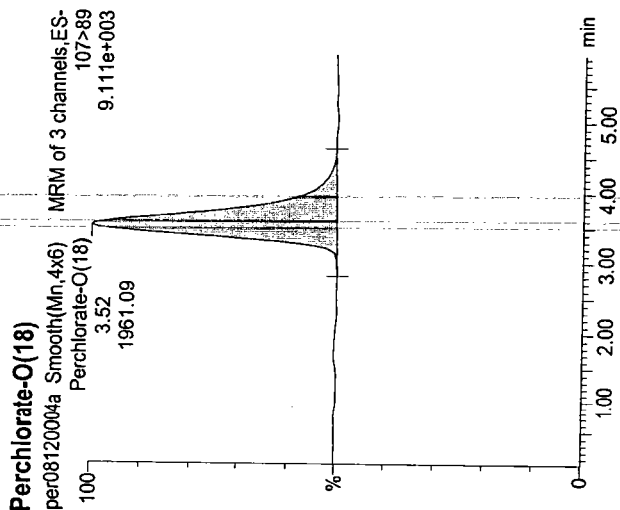


h/s/188

MM= Manually Modified

Quantify Sample Report
General Engineering Labs, LLC., Analyst : Janice Willey

Dataset: C:\MASSLYNX\New_Per.PRO\per081204a.qld, Time: Fri Aug 13 07:51:42 2004



#	ID	Name	Trace	RT	Area	IS Area	Abs.Resp	Response	Flags	Mod.D	Mod.TI	S/N	Conc	%Rec	Ratio
1	WCL040803-02	Perchlorate	99>83	3.55	427.846		427.846	427.846	bb			81.9	0.1178	117.8	2.41
2	WCL040803-02	Perchlorate-101	101>85	3.57	177.663		177.663	177.663	bb			36.8	0.1329	132.9	
3	WCL040803-02	Perchlorate-O(18)	107>89	3.52	1961.092		1961.092	1961.092	bb			476.5	0.5116	102.3	

4.46e+003

4.46e+003

Quantify Sample Report

General Engineering Labs, LLC., Analyst : Janice Willey

Printed: Fri Aug 13 07:53:17 2004, Page 9 of 141

Dataset: C:\MASSLYNX\New_Per.PRO\per081204a.qld, Time: Fri Aug 13 07:51:42 2004

Name: C:\MASSLYNX\NEW_PER.PRO\Data\per08120005a

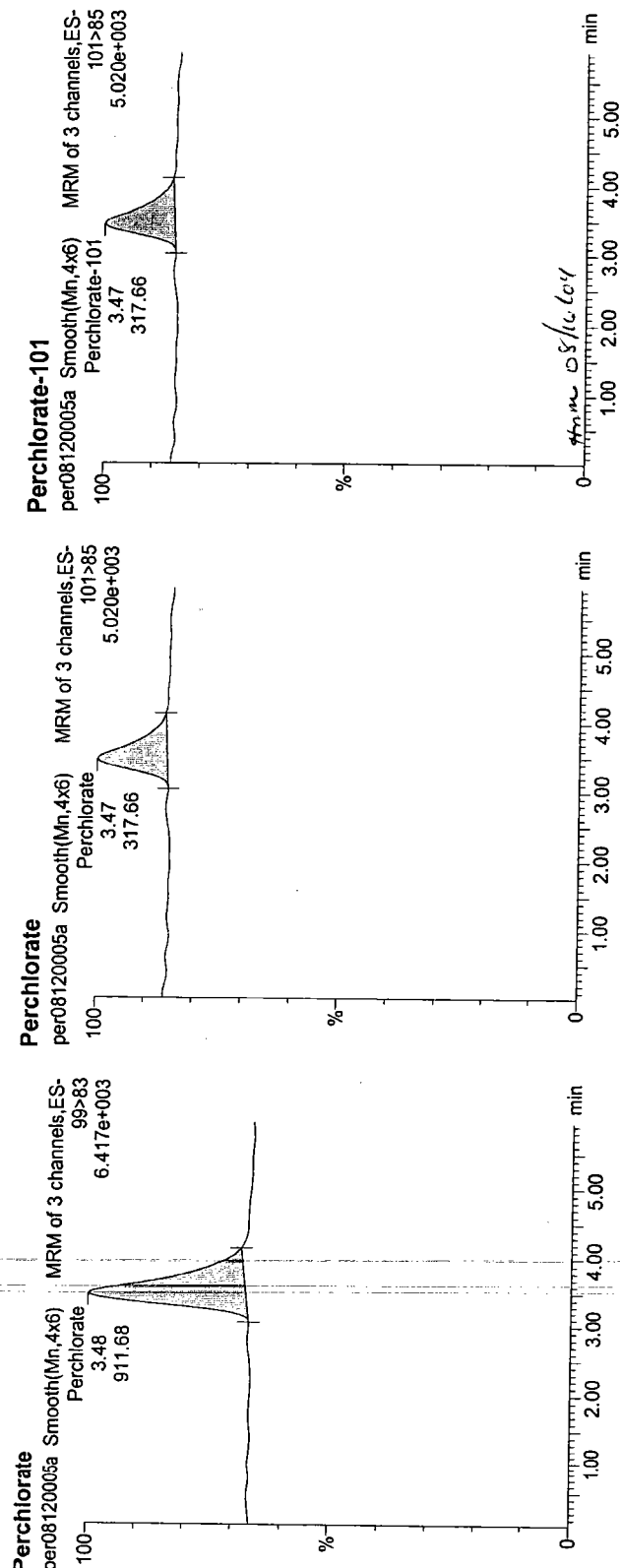
Date: 12-Aug-2004

Time: 16:36:43

ID: WCL040803-03

Vial: 1:1,D

User:



1/1/18

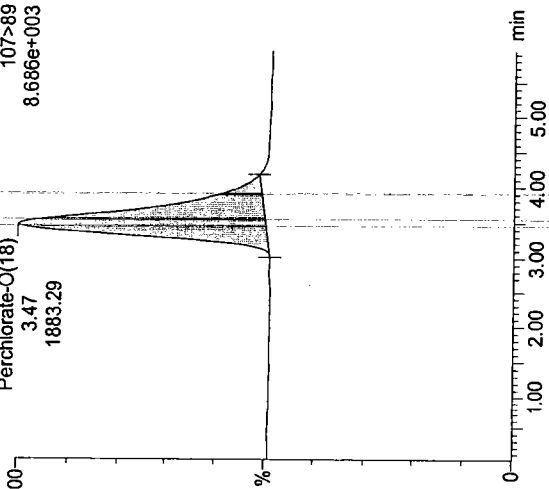
MM= Manually Modified

Quantify Sample Report
General Engineering Labs, LLC., Analyst : Janice Willey

Dataset: C:\MASSLYNX\New_Per.PRO\per081204a.qld, Time: Fri Aug 13 07:51:42 2004

Perchlorate-O(18)

per08120005a Smooth(Mn,4x6) MRM of 3 channels,ES-
Perchlorate-O(18) 107>89
3.47 8.686e+003
1883.29



#	ID	Name	Trace	RT	Area	IS Area	Abs Resp	Response	Flags	Mod.D	Mod.TL	S/N	Conc	%Rec	Ratio
1	WCL040803-03	Perchlorate	99>83	3.48	911.677		911.677	911.677	bb			151.2	0.2510	100.4	2.87
2	WCL040803-03	Perchlorate-101	101>85	3.47	317.662		317.662	317.662	bb			98.0	0.2376	95.0	
3	WCL040803-03	Perchlorate-O(18)	107>89	3.47	1883.292		1883.292	1883.292	bb			664.9	0.4913	98.3	

Area 1883.292

WCL040803-03

Dataset: C:\MASSLYNX\New_Per.PRO\per081204a.qld, Time: Fri Aug 13 07:51:42 2004

Name: C:\MASSLYNX\NEW_PER.PRO\Data\per08120006a

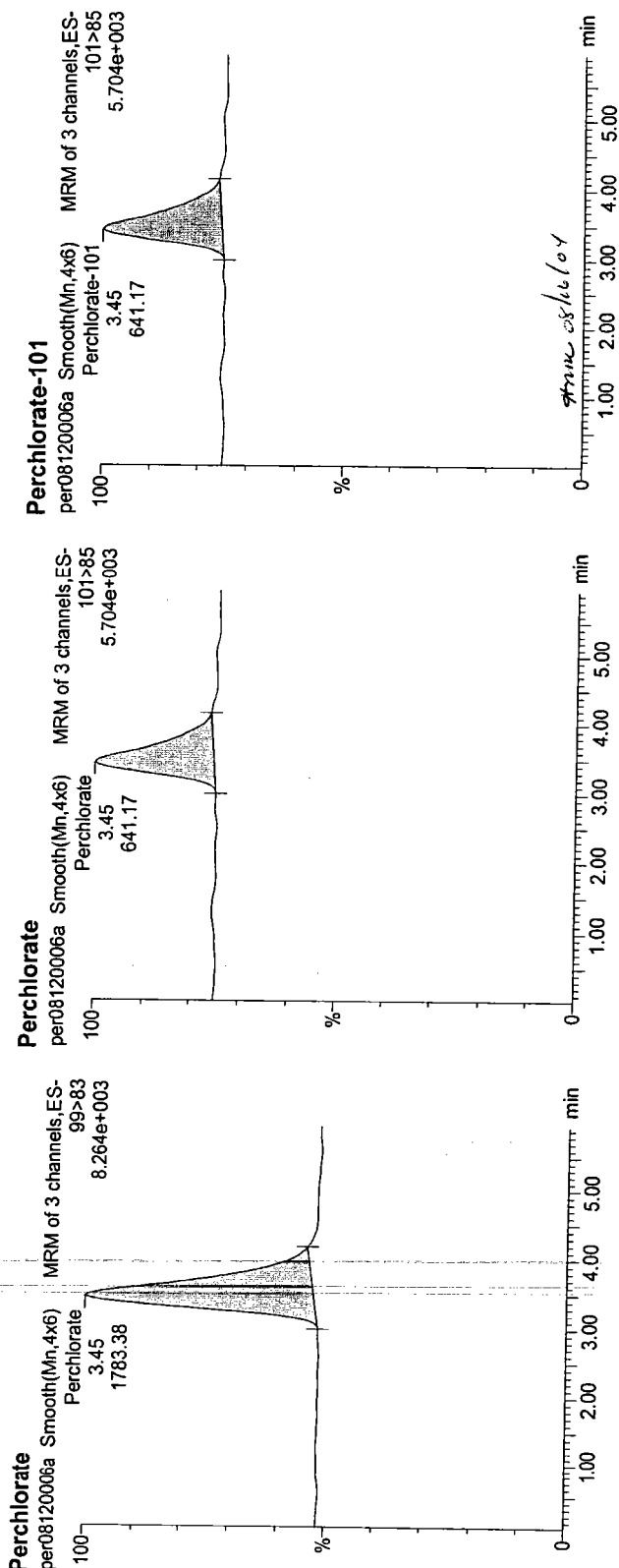
Date: 12-Aug-2004

Time: 16:43:42

ID: WCL040803-04

Vial: 1:1,E

User:

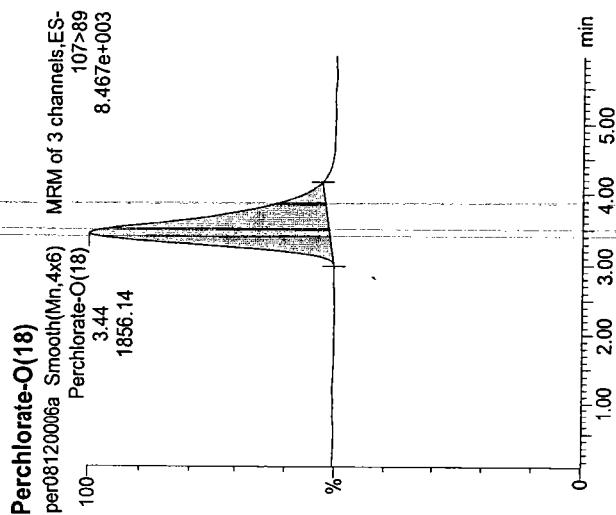


4/15/04

MM= Manually Modified

Quantify Sample Report
General Engineering Labs, LLC., Analyst : Janice Willey

Dataset: C:\MASSLYNX\New_Per.PRO\per081204a.qld, Time: Fri Aug 13 07:51:42 2004



# ID	Name	Trace	RT	Area	IS Area	Abs Resp	Response	Flags	Mod ID	Mod II	S/N	Conc	% Rec	Ratio
1	WCL040803-04	Perchlorate	99>83	3.45	1783.379	1783.379	1783.379	bb			297.4	0.4910	98.2	2.78
2	WCL040803-04	Perchlorate-101	101>85	3.45	641.168	641.168	641.168	bb			150.7	0.4795	95.9	
3	WCL040803-04	Perchlorate-O(18)	107>89	3.44	1856.141	1856.141	1856.141	bb			459.8	0.4842	96.8	

from 08/12/04

4/15/04

Quantify Sample Report
General Engineering Labs, LLC., Analyst : Janice Willey

Dataset: C:\MASSLYNX\New_Per.PRO\per081204a.qld, Time: Fri Aug 13 07:51:42 2004

Name: C:\MASSLYNX\NEW_PER.PRO\Data\per08120007a

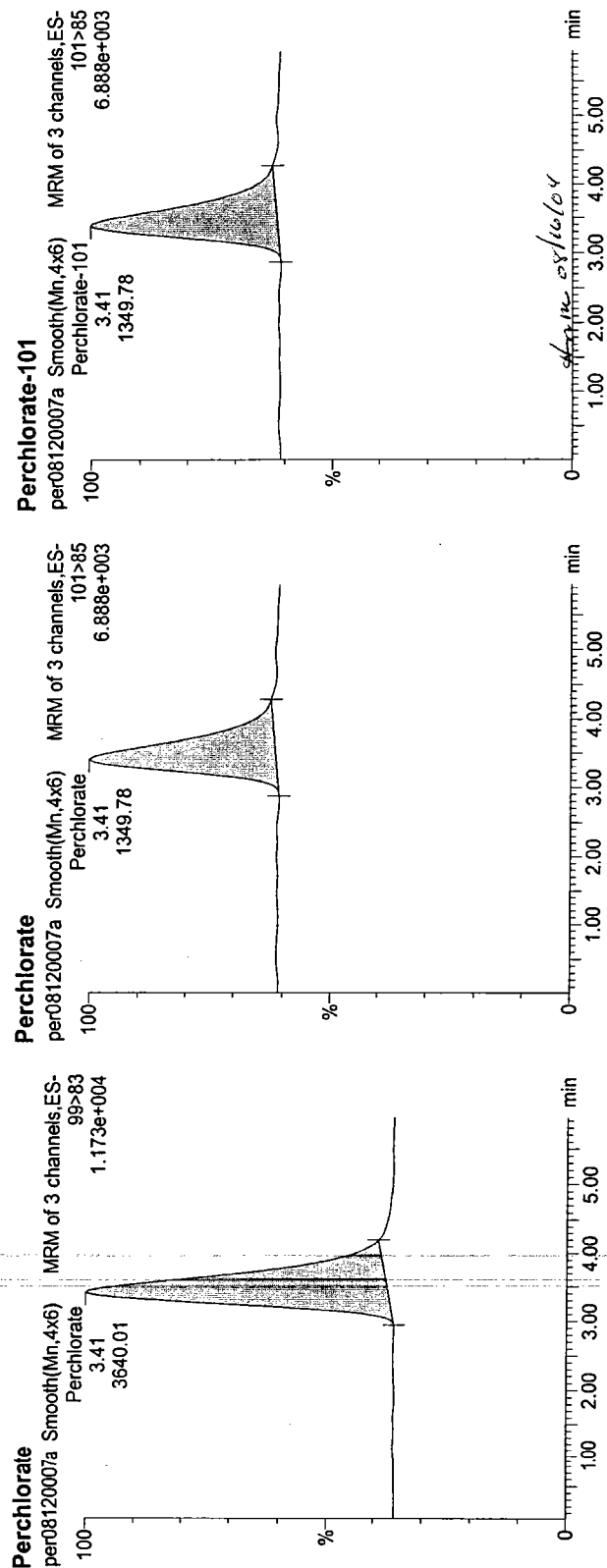
Date: 12-Aug-2004

Time: 16:50:42

ID: WCL040803-05

Vial: 1:1,F

User:

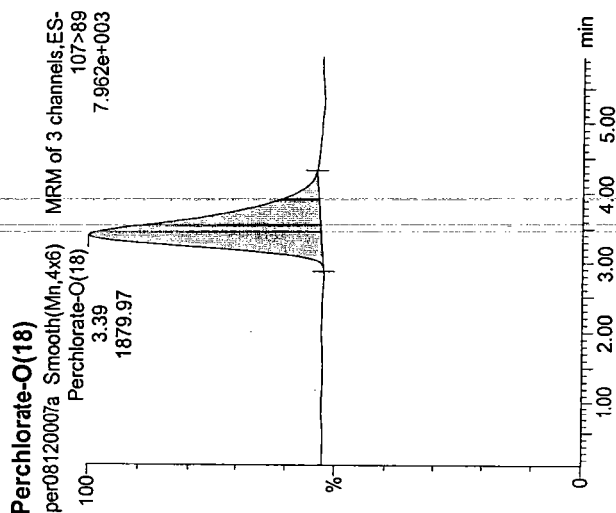


1/15/04

MM= Manually Modified

Quantify Sample Report
General Engineering Labs, LLC., Analyst : Janice Willey

Dataset: C:\MASSLYNX\New_Per\PRO\per081204a.qld, Time: Fri Aug 13 07:51:42 2004



#	ID	Name	Trace	RT	Area	IS Area	Abs. Resp	Response	Flags	Mod.D.	Mod.TI	S/N	Conc.	%Rec	Ratio
1	WCL040803-05	Perchlorate	99>83	3.41	3640.012		3640.012	3640.012	bb			624.1	1.0022	100.2	2.70
2	WCL040803-05	Perchlorate-101	101>85	3.41	1349.778		1349.778	1349.778	bb			374.2	1.0095	101.0	
3	WCL040803-05	Perchlorate-O(18)	107>89	3.39	1879.967		1879.967	1879.967	bb			1029.2	0.4904	98.1	

Area of 107>89

8/13/04

Perchlorate Initial Calibration

Lab Name: General Engineering Laboratories GEL Job No.(SDG): 118884

Lab Code: GEL

Instrument ID: LCMSMS Date Analyzed: 13-AUG-04

HPLC Column: Phenomenex Ion Pac AG-16 2 X 50 mm

Calibration Level	1	2	3	4	5
Cal Concentration (ug/L)	0.05	0.1	0.25	0.50	1.0

Parname Perchlorate

Coefficient of Determination: .9996

Calibration Curve: 3583.98X + 0

Response Type: External Standard

Curve Type: Linear Null

Form 2

Perchlorate Initial Calibration

GEL Job No.(SDG): 118884

Lab Name: General Engineering Laboratories

Lab Code: GEL

Instrument ID: LCMSMS Date Analyzed: 13-AUG-04

HPLC Column: Phenomenex Ion Pac AG-16 2 X 50 mm

Calibration Level	1	2	3	4	5
Cal Concentration (ug/L)	0.05	0.1	0.25	0.50	1.0

Parname Perchlorate-101

Coefficient of Determination: .9998

Calibration Curve: 1250.4X + 0

Response Type: External Standard

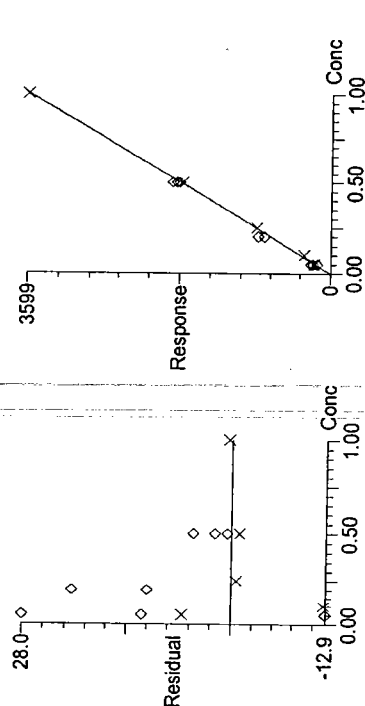
Curve Type: Linear Null

Quantify Calibration Report
General Engineering Labs, LLC., Analyst: Janice Willey

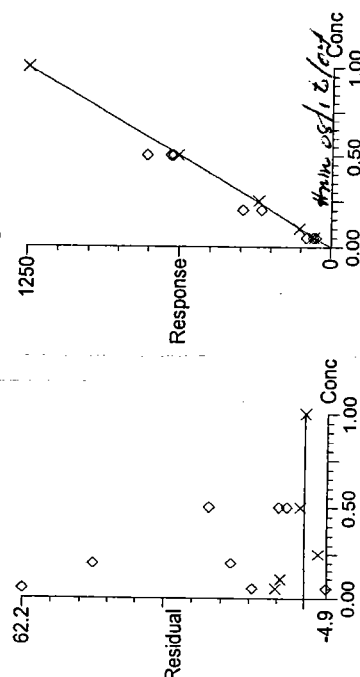
Dataset: C:\MASSLYNX\New_Per.PRO\per081304a.qld, Time: Fri Aug 13 12:57:37 2004

Method: C:\MASSLYNX\New_Per.PRO\MethDB\per081304a.mdb, Time: Fri Aug 13 09:19:04 2004
Calibration: Untitled, Time: Fri Aug 13 12:57:37 2004

Compound name: Perchlorate
Coefficient of Determination: 0.999643
Calibration curve: $3583.98 * X$
Response type: External Std, Area
Curve type: Linear, Origin: Force, Weighting: Null, Axis trans: None



Compound name: Perchlorate-101
Coefficient of Determination: 0.999789
Calibration curve: $1250.4 * X$
Response type: External Std, Area
Curve type: Linear, Origin: Force, Weighting: Null, Axis trans: None



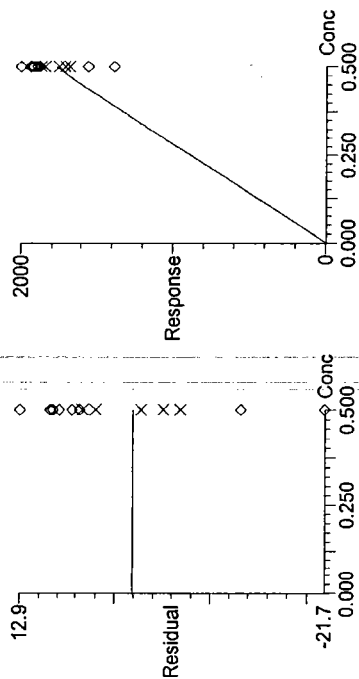
MM= Manually Modified

Quantify Calibration Report

General Engineering Labs, LLC., Analyst : Janice Willey

Dataset: C:\MASSLYN\New_Per.PRO\per081304a.qld, Time: Fri Aug 13 12:57:37 2004

Compound name: Perchlorate-O(18)
 Coefficient of Determination: 0.000000
 Calibration curve: $3543.33 \cdot x$
 Response type: External Std, Area
 Curve type: Linear, Origin: Force, Weighting: Null, Axis trans: None



MM= Manually Modified

Quantify Sample Report
General Engineering Labs, LLC., Analyst : Janice Willey

Dataset: C:\MASSLYNX\New_Per\PRO\per081304a.qld, Time: Fri Aug 13 12:57:37 2004

Name: C:\MASSLYNX\NEW_PER\PRO\Data\per08130003a

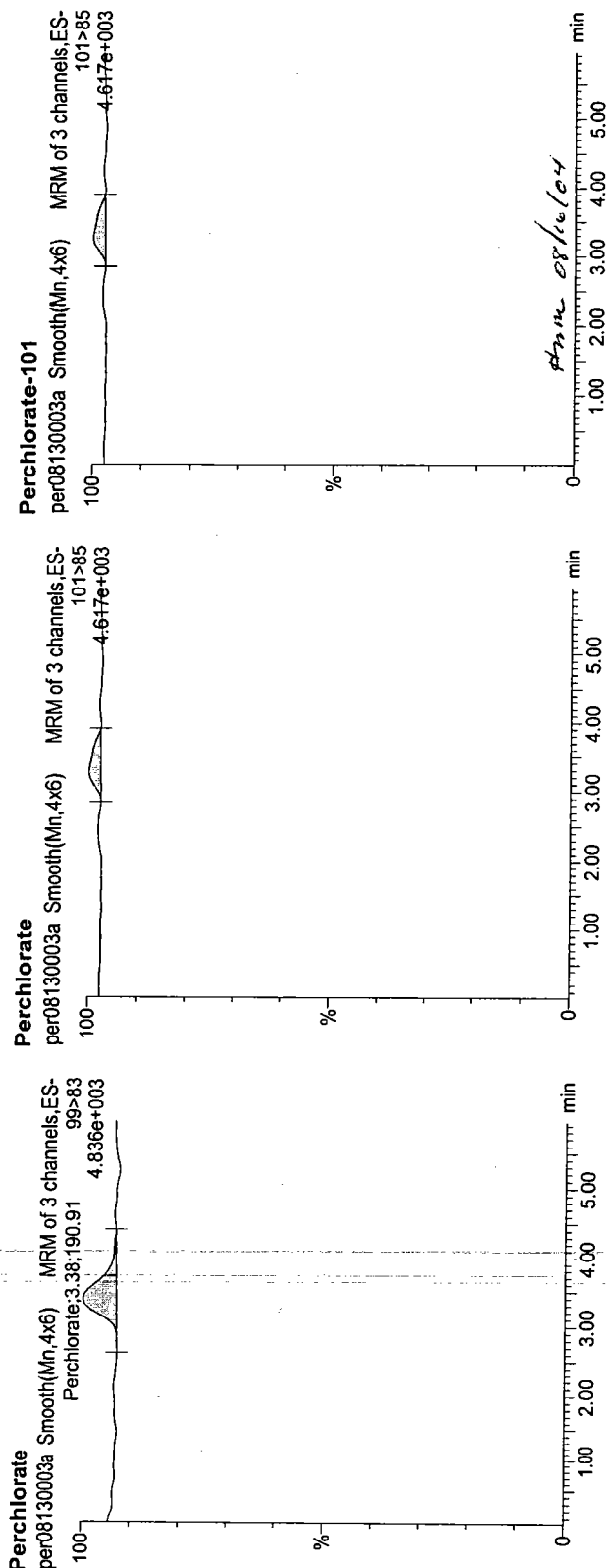
Date: 13-Aug-2004

Time: 08:26:47

ID: WCL040803-01

Vial: 1:1,B

User:

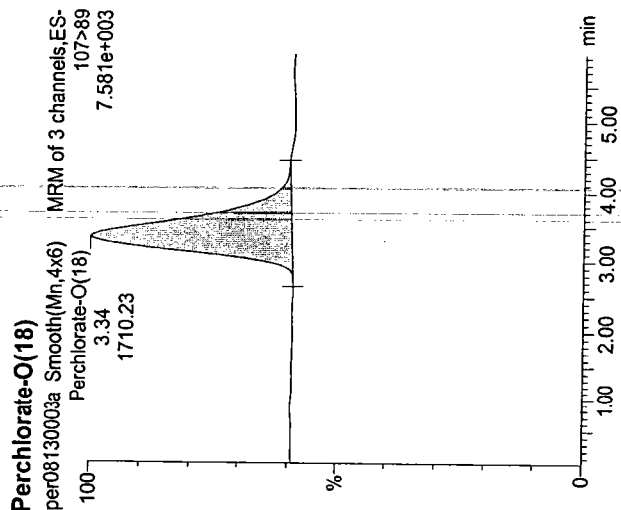


8/13/04

MM= Manually Modified

Quantify Sample Report
General Engineering Labs, LLC., Analyst : Janice Willey

Dataset: C:\MASSLYNX\New_Per.PRO\per081304a.qld, Time: Fri Aug 13 12:57:37 2004



# ID	Name	Trace	RT	Area	IS Area	Abs.Resp	Response	Flags	Mod.D	Mod.TI	S/N	Conc.	%Rec	Ratio
1	WCL040803-01	Perchlorate	99>83	3.38	190.912	190.912	190.912	bb			61.4	0.0533	106.5	2.87
2	WCL040803-01	Perchlorate-101	101>85	3.27	66.616	66.616	66.616	bb			12.2	0.0533	106.6	
3	WCL040803-01	Perchlorate-O(18)	107>89	3.34	1710.234	1710.234	1710.234	bb			138.4	0.4827	96.5	

7/28/04

7/28/04

Quantify Sample Report
General Engineering Labs, LLC., Analyst : Janice Willey

Dataset: C:\MASSLYNX\New_Per.PRO\per081304a.qld, Time: Fri Aug 13 12:57:37 2004

Name: C:\MASSLYNX\NEW_PER.PRO\Data\per08130004a

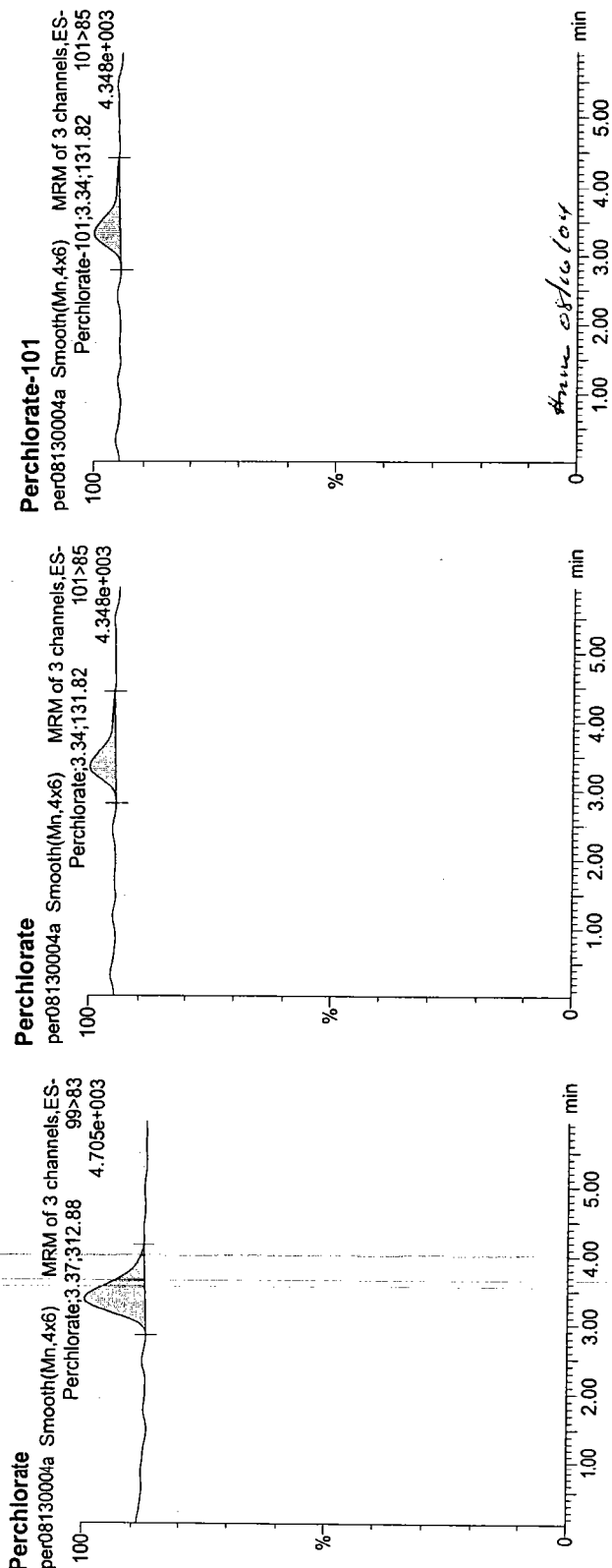
Date: 13-Aug-2004

Time: 08:33:46

ID: WCL040803-02

Vial: 1:1,C

User:

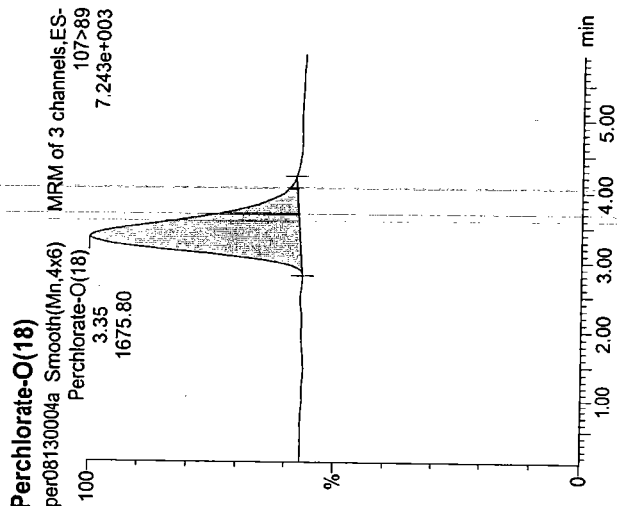


08/13/04

MM= Manually Modified

Quantify Sample Report
General Engineering Labs, LLC., Analyst : Janice Willey

Dataset: C:\MASSLYNX\New_Per.PRO\per081304a.qld, Time: Fri Aug 13 12:57:37 2004



# ID	Name	Trace	RT	Area	IS Area	Abs Resp	Response	Flags	Mod.D...	Mod.TL...	S/N	Conc	%Rec	Ratio
1	WCL040803-02	Perchlorate	99>83	3.37	312.881	312.881	312.881	bb			55.2	0.0873	87.3	2.37
2	WCL040803-02	Perchlorate-101	101>85	3.34	131.822	131.822	131.822	bb			19.0	0.1054	105.4	
3	WCL040803-02	Perchlorate-O(18)	107>89	3.35	1675.799	1675.799	1675.799	bb			267.1	0.4729	94.6	

perme
05/16/04

2/19/04
JLW

MM= Manually Modified

Quantify Sample Report
General Engineering Labs, LLC., Analyst : Janice Willey

Dataset: C:\MASSLYNX\New_Per\PRO\per081304a.qld, Time: Fri Aug 13 12:57:37 2004

Name: C:\MASSLYNX\NEW_PER\PRO\Data\per08130005a

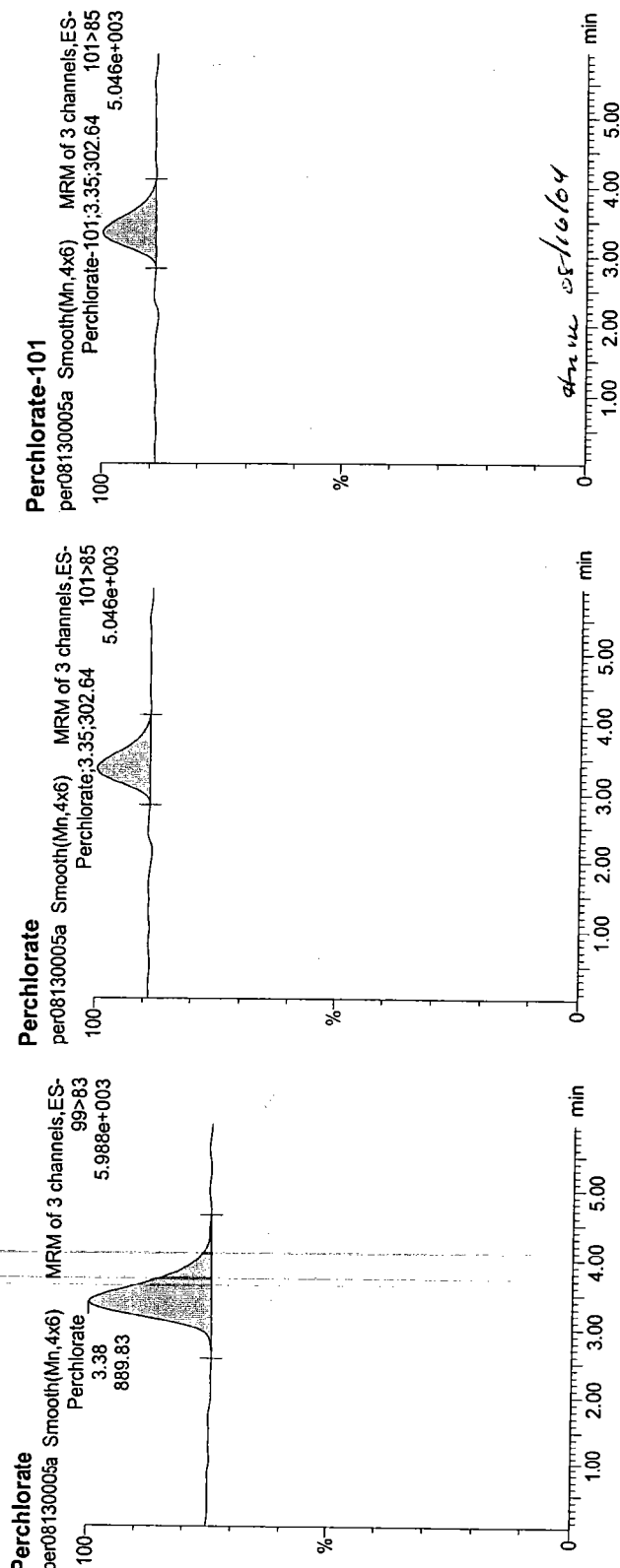
Date: 13-Aug-2004

Time: 08:40:46

ID: WCL040803-03

Vial: 1:1,D

User:

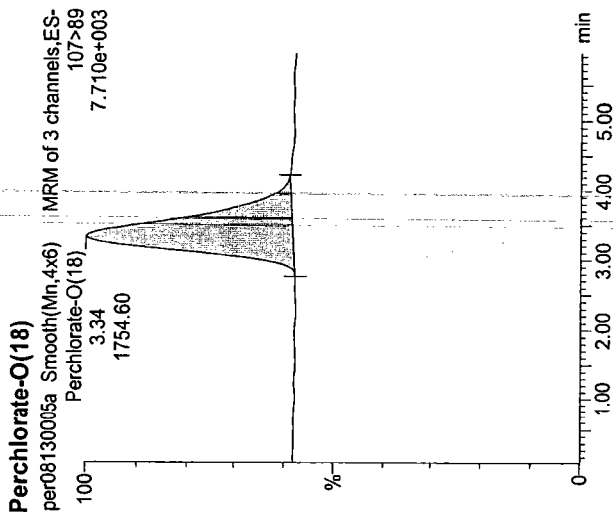


Handwritten: 1/13/04
JW

MM= Manually Modified

Quantify Sample Report
General Engineering Labs, LLC., Analyst : Janice Willey

Dataset: C:\MASSLYNX\New_Per.PRO\per081304a.qld, Time: Fri Aug 13 12:57:37 2004



# ID	Name	Trace	RT	Area	IS Area	Abs.Resp	Response	Flags	Mod.D	Mod.Tr	S/N	Conc.	%Rec	Ratio
1	WCL040803-03	Perchlorate	99>83	3.38	889.833	889.833	889.833	bb			29.9	0.2483	99.3	2.94
2	WCL040803-03	Perchlorate-101	101>85	3.35	302.640	302.640	302.640	bb			32.5	0.2420	96.8	
3	WCL040803-03	Perchlorate-O(18)	107>89	3.34	1754.604	1754.604	1754.604	bb			416.3	0.4952	99.0	

Janice 08/16/04

12/17/04
CG

Quantify Sample Report
General Engineering Labs, LLC, Analyst : Janice Willey

Dataset: C:\MASSLYNX\New_Per.PRO\per081304a.qld, Time: Fri Aug 13 12:57:37 2004

Name: C:\MASSLYNX\NEW_PER.PRO\Data\per08130006a

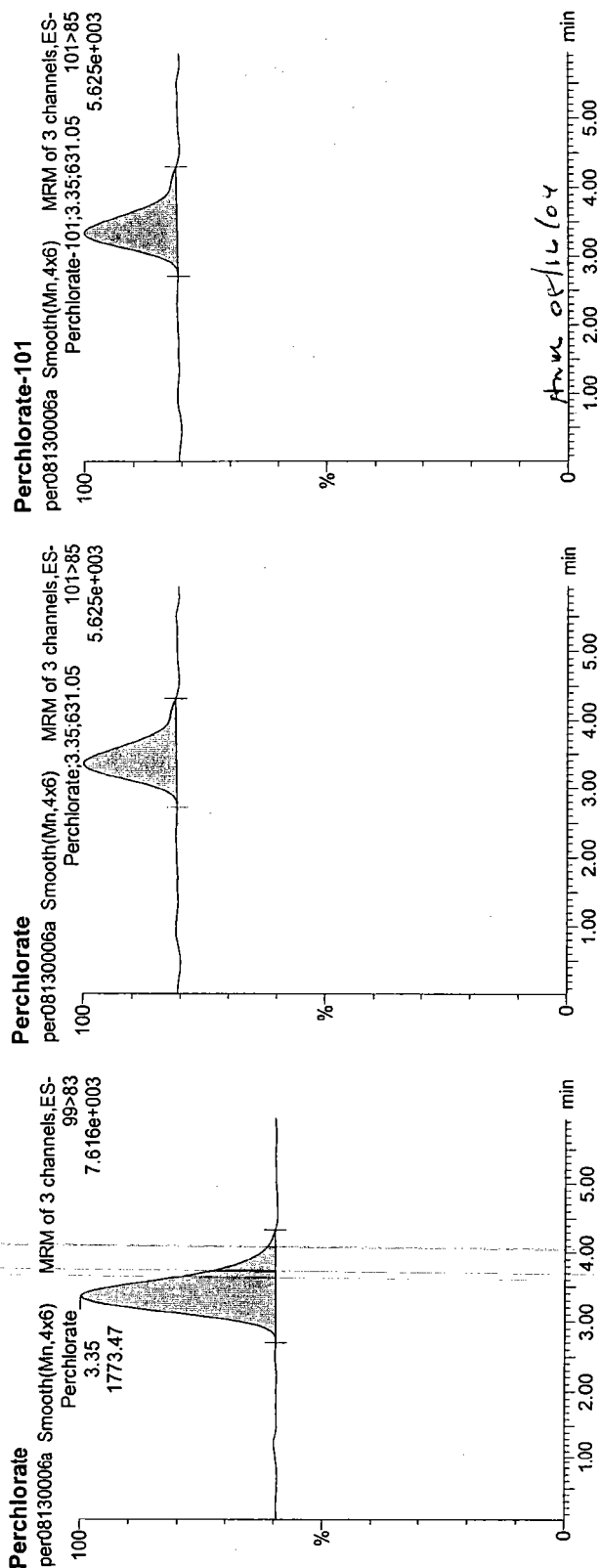
Date: 13-Aug-2004

Time: 08:47:46

ID: WCL040803-04

Vial: 1:1,E

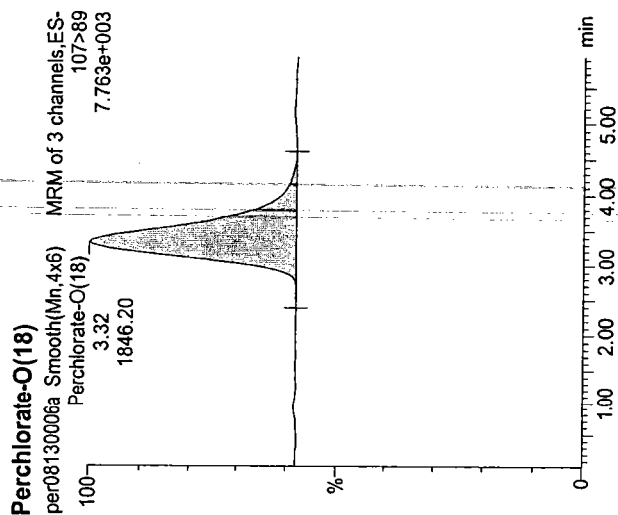
User:



2813/14

Quantify Sample Report
General Engineering Labs, LLC, Analyst : Janice Willey

Dataset: C:\MASSLYNX\New\Per.PRO\per081304a.qld, Time: Fri Aug 13 12:57:37 2004



# ID	Name	Trace	RT	Area	IS Area	Abs. Resp	Response	Flags	Mod.D.	Mod.Ti...	S/N	Conc.	%Rec	Ratio
1	WCL040803-04	Perchlorate	99>83	3.35	1773.466	1773.466	1773.466	bb			380.9	0.4948	99.0	2.81
2	WCL040803-04	Perchlorate-101	101>85	3.35	631.050	631.050	631.050	bb			224.0	0.5047	100.9	
3	WCL040803-04	Perchlorate-O(18)	107>89	3.32	1846.201	1846.201	1846.201	bb			495.4	0.5210	104.2	

mm 8/16/04

8/13/04

MM= Manually Modified

Quantify Sample Report
General Engineering Labs, LLC, Analyst: Janice Willey

Dataset: C:\MASSLYNX\New_Per.PRO\per081304a.qld, Time: Fri Aug 13 12:57:37 2004

Name: C:\MASSLYNX\NEW_PER.PRO\Data\per08130007a

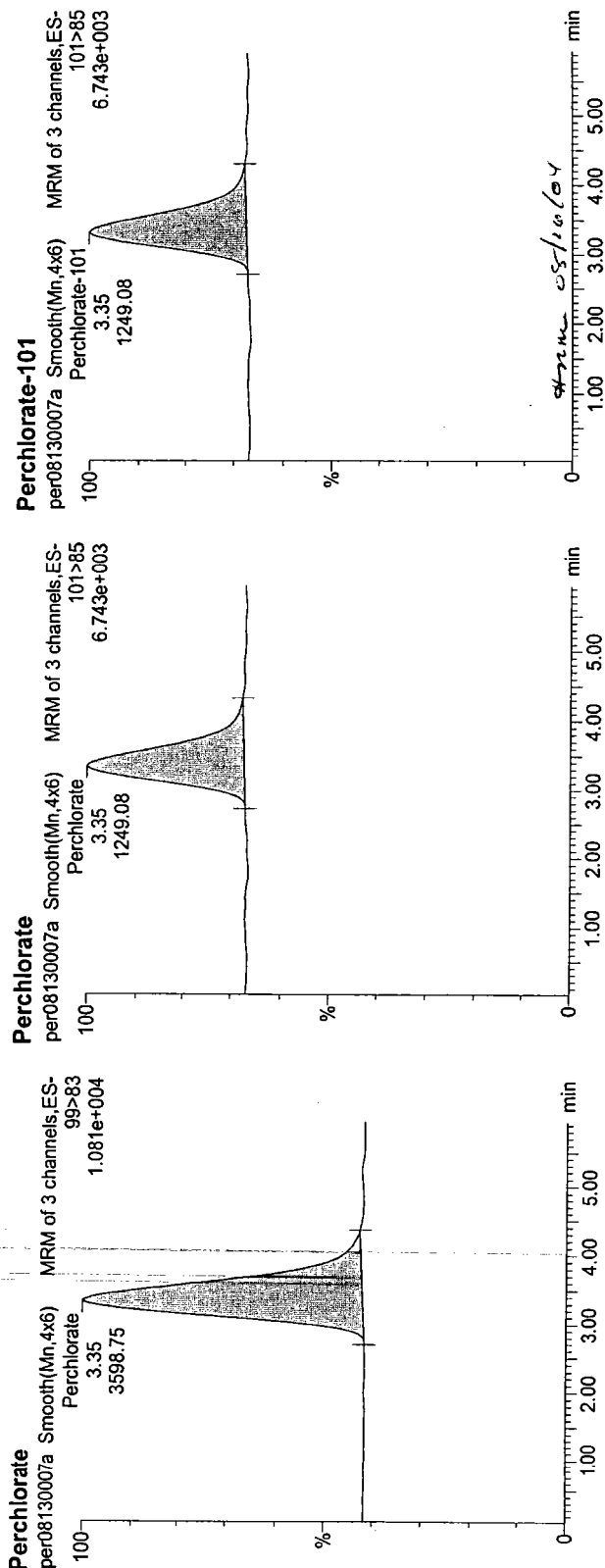
Date: 13-Aug-2004

Time: 08:54:45

ID: WCL040803-05

Vial: 1:1,F

User:

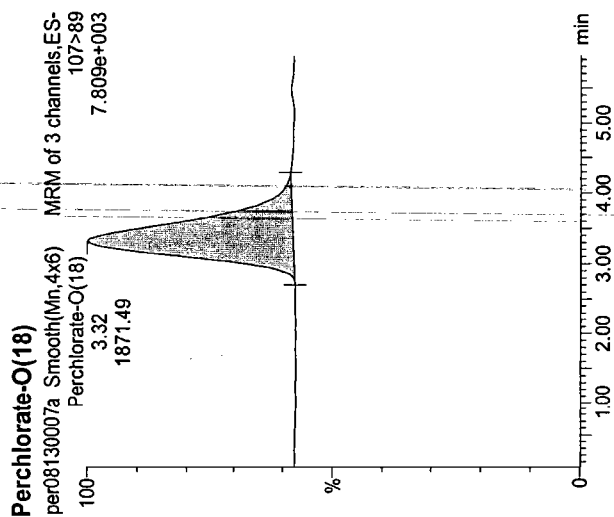


4/8/04

MM= Manually Modified

Quantify Sample Report
General Engineering Labs, LLC., Analyst : Janice Willey

Dataset: C:\MASSLYNX\New_Per.PRO\per081304a.qld, Time: Fri Aug 13 12:57:37 2004



# ID	Name	Trace	RT	Area	S/Area	Abs.Resp	Response	Flags	Mod.D	Mod.T	S/N	Conc.	%Rec	Ratio
1	WCL040803-05	Perchlorate	99>83	3.35	3598.747	3598.747	3598.747	bb			675.2	1.0041	100.4	2.88
2	WCL040803-05	Perchlorate-101	101>85	3.35	1249.081	1249.081	1249.081	bb			154.8	0.9989	99.9	
3	WCL040803-05	Perchlorate-O(18)	107>89	3.32	1871.493	1871.493	1871.493	bb			228.3	0.5282	105.6	

Handwritten: $\frac{1871.49}{0.5282} = 3543.0$

Handwritten: 8/13/04

Form 3

Perchlorate Initial Calibration Verification

Lab Name: General Engineering Laboratories

GEL Job No.(SDG): 118884

Lab Code: GEL

Reporting Units: ug/L

Analyte	True	Found	%Rec	Date Analyzed	GEL File Id
Perchlorate	.5	.53	106.21	12-AUG-04 16:57	per08120008a
Perchlorate Isotope Ratio		3.04		12-AUG-04 16:57	per08120008a
Perchlorate-101	.5	.47	94.97	12-AUG-04 16:57	per08120008a
Perchlorate	.5	.51	102.21	13-AUG-04 09:01	per08130008a
Perchlorate Isotope Ratio		2.42		13-AUG-04 09:01	per08130008a
Perchlorate-101	.5	.61	121.31	13-AUG-04 09:01	per08130008a

Dataset: C:\MASSLYNX\New_Per.PRO\per081204a.qld, Time: Fri Aug 13 07:51:42 2004

Name: C:\MASSLYNX\NEW_PER.PRO\Data\per08120008a

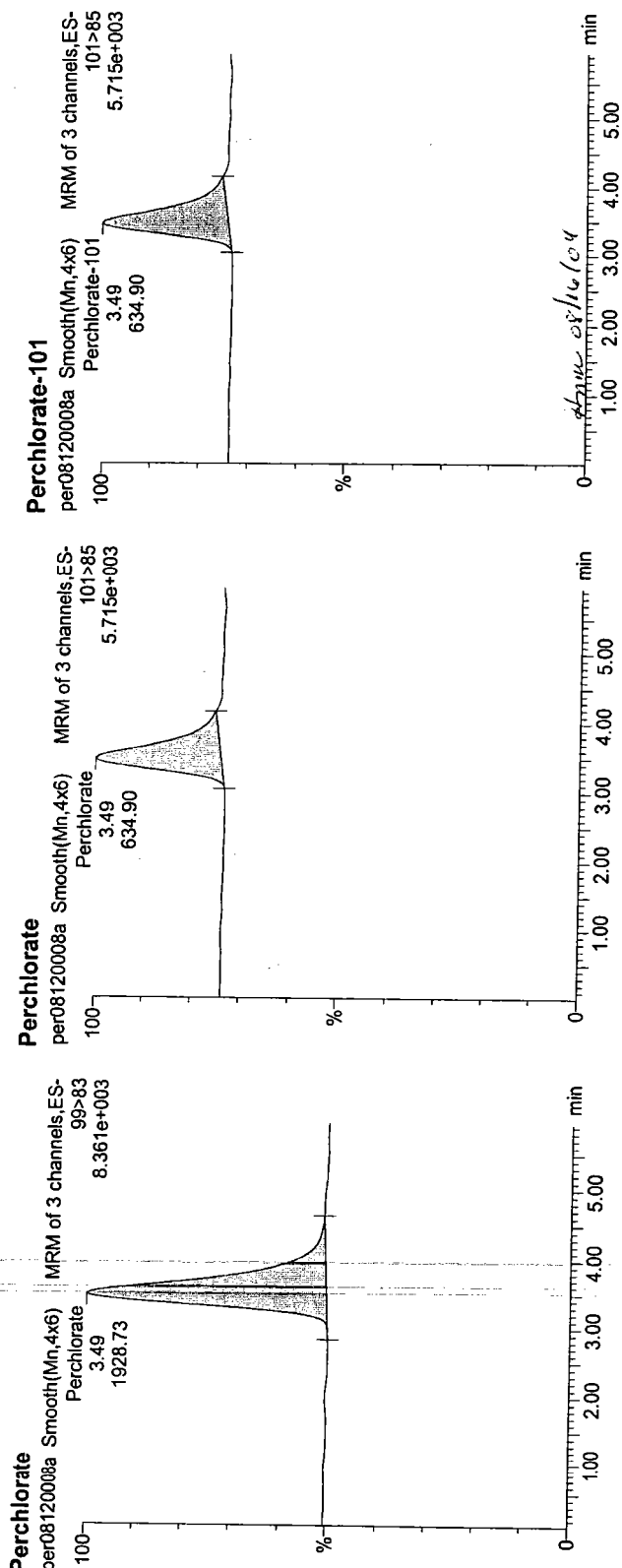
Date: 12-Aug-2004

Time: 16:57:41

ID: WCL040803-061CV

Vial: 1:2,A

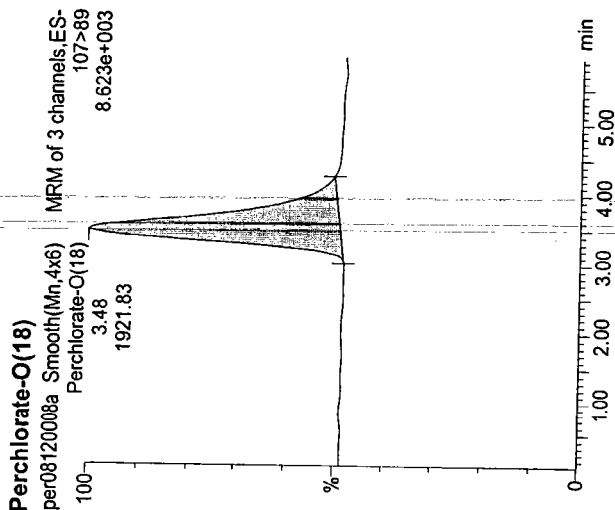
User:



Done 08/16/04

MM= Manually Modified

Dataset: C:\MASSLYNX\New_Per.PRO\per081204a.qld, Time: Fri Aug 13 07:51:42 2004



#	ID	Name	Trace	RT	Area	IS Area	Abs. Resp	Response	Flags	Mod.D	Mod.T	S/N	Conc	%Rec	Ratio
1	WCL040803-06ICV	Perchlorate	99>83	3.49	1928.734	1928.734	1928.734	1928.734	bb			406.5	0.5310	106.2	3.04
2	WCL040803-06ICV	Perchlorate-101	101>85	3.49	634.905	634.905	634.905	634.905	bb			76.6	0.4749	95.0	
3	WCL040803-06ICV	Perchlorate-O(18)	107>89	3.48	1921.827	1921.827	1921.827	1921.827	bb			385.7	0.5013	100.3	

chm 08/16/04

8/13/04

Quantify Sample Report
General Engineering Labs, LLC., Analyst : Janice Willey

Dataset: C:\MASSLYNX\New_Per.PRO\per081304a.qld, Time: Fri Aug 13 12:57:37 2004

Name: C:\MASSLYNX\NEW_PER.PRO\Data\per08130008a

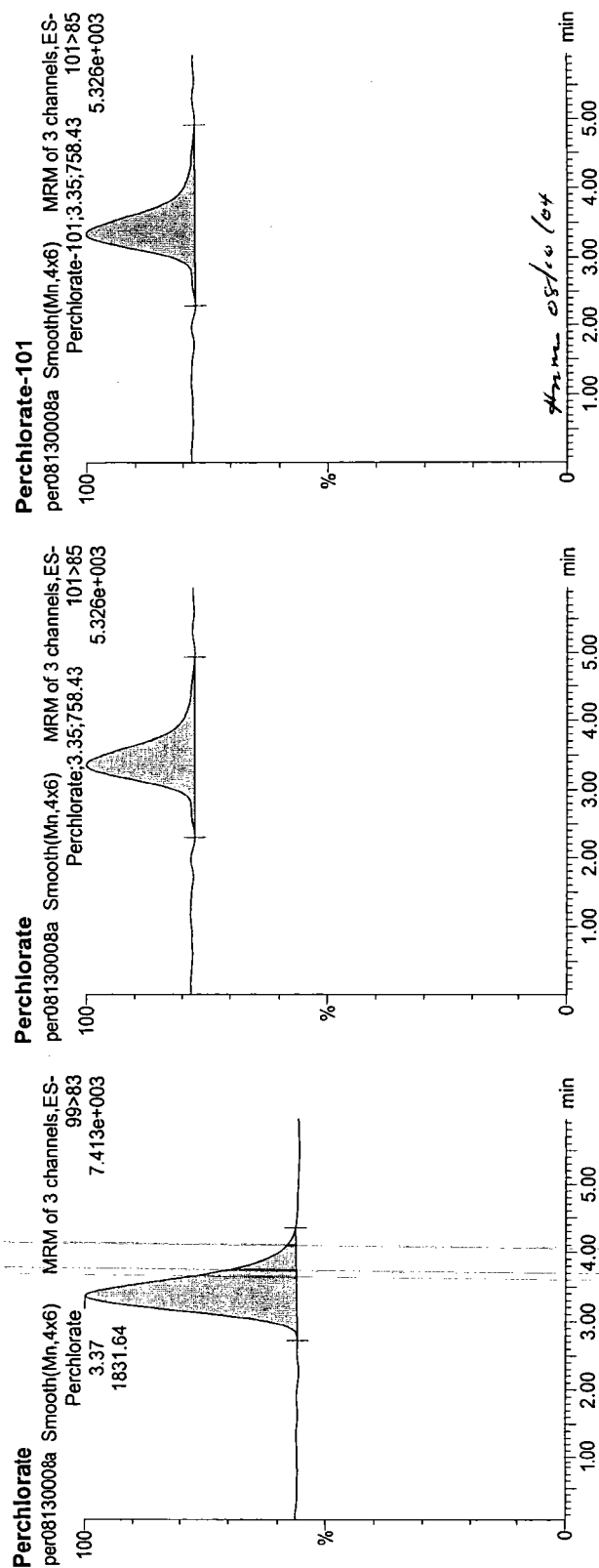
Date: 13-Aug-2004

Time: 09:01:45

ID: WCL040803-06ICV

Vial: 1:2,A

User:

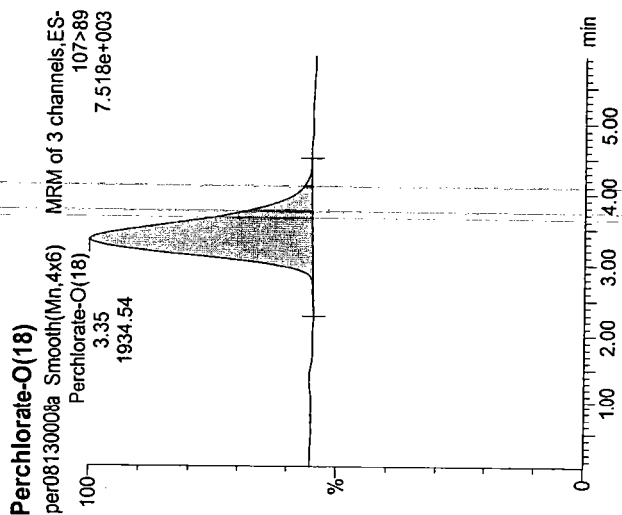


8/13/04

MM= Manually Modified

Quantify Sample Report
General Engineering Labs, LLC., Analyst : Janice Willey

Dataset: C:\MASSLYNX\New_Per\PRO\per081304a.qld, Time: Fri Aug 13 12:57:37 2004



# ID	Name	Trace	RT	Area	S Area	Abs Resp	Response	Flags	Mod ID	Mod TL	S/N	Conc	%Rec	Ratio
1	WCL040803-06ICV Perchlorate	99>83	3.37	1831.636		1831.636	1831.636	bb			228.3	0.5111	102.2	2.42
2	WCL040803-06ICV Perchlorate-101	101>85	3.35	758.428		758.428	758.428	bb			93.4	0.6065	121.3	
3	WCL040803-06ICV Perchlorate-O(18)	107>89	3.35	1934.537		1934.537	1934.537	bb			533.6	0.5460	109.2	

atom 08/16/04

8/16/04

Form 3

Perchlorate Continuing Calibration Verification

Lab Name: General Engineering Laboratories

GEL Job No.(SDG): 118884

Lab Code: GEL

Reporting Units: ug/L

Analyte	True	Found	%Rec	Date Analyzed	GEL File Id
Perchlorate	.5	.52	104.84	12-AUG-04 20:25	per08120037a
Perchlorate Isotope Ratio		2.75		12-AUG-04 20:25	per08120037a
Perchlorate-101	.5	.52	103.43	12-AUG-04 20:25	per08120037a
Perchlorate	.5	.56	111.22	12-AUG-04 21:56	per08120050a
Perchlorate Isotope Ratio		3.01		12-AUG-04 21:56	per08120050a
Perchlorate-101	.5	.5	100.53	12-AUG-04 21:56	per08120050a
Perchlorate	.5	.53	105.09	13-AUG-04 10:45	per08130021a
Perchlorate Isotope Ratio		2.85		13-AUG-04 10:45	per08130021a
Perchlorate-101	.5	.53	105.79	13-AUG-04 10:45	per08130021a
Perchlorate	.5	.5	100.57	13-AUG-04 11:43	per08130029a
Perchlorate Isotope Ratio		2.77		13-AUG-04 11:43	per08130029a
Perchlorate-101	.5	.52	104.01	13-AUG-04 11:43	per08130029a

Name: C:\MASSLYNX\NEW_PER.PRO\Data\per08120037a

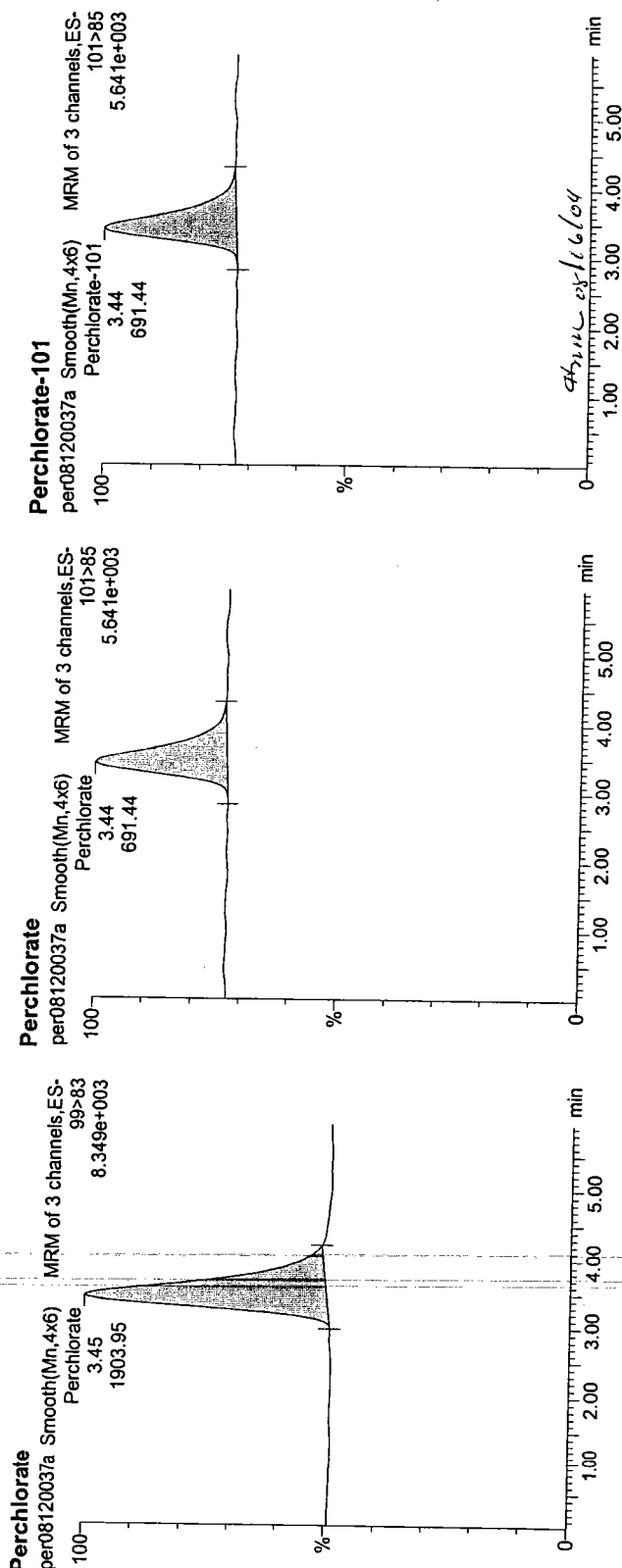
Date: 12-Aug-2004

Time: 20:25:47

ID: WCL040803-06CCV

Vial: 3:1,A

User:

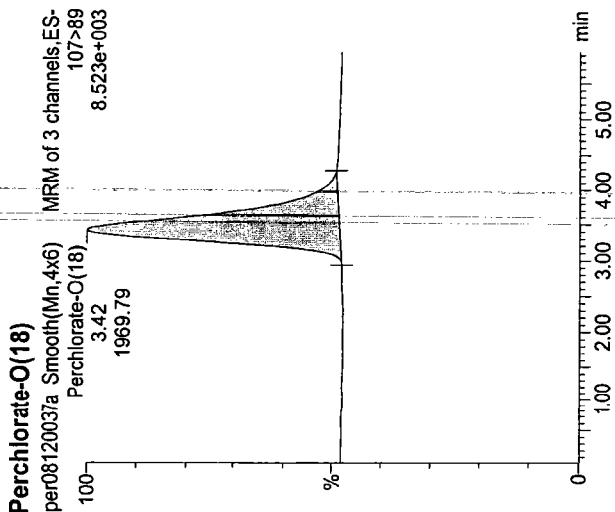


1/5/13/1

MM= Manually Modified

Quantify Sample Report
General Engineering Labs, LLC., Analyst : Janice Willey

Dataset: C:\MASSLYNX\New_Per\PRO\per081204a.qld, Time: Fri Aug 13 07:51:42 2004



#	ID	Name	Trace	RT	Area	IS Area	Abs Resp	Response	Flags	Mod.D	Mod.IT	S/N	Conc	%Rec	Ratio
1	WCL040803-06CCV	Perchlorate	99>83	3.45	1903.948	1903.948	1903.948	1903.948	bb			325.7	0.5242	104.8	2.75
2	WCL040803-06CCV	Perchlorate-101	101>85	3.44	691.442	691.442	691.442	691.442	bb			187.3	0.5171	103.4	
3	WCL040803-06CCV	Perchlorate-O(18)	107>89	3.42	1969.789	1969.789	1969.789	1969.789	bb			426.1	0.5138	102.8	

Handwritten: 4/13/04

Handwritten: J 8/13/04

Quantify Sample Report
General Engineering Labs, LLC., Analyst : Janice Willey

Dataset: C:\MASSLYNX\New_Per.PRO\per081204a.qld, Time: Fri Aug 13 07:51:42 2004

Name: C:\MASSLYNX\NEW_PER.PRO\Data\per08120050a

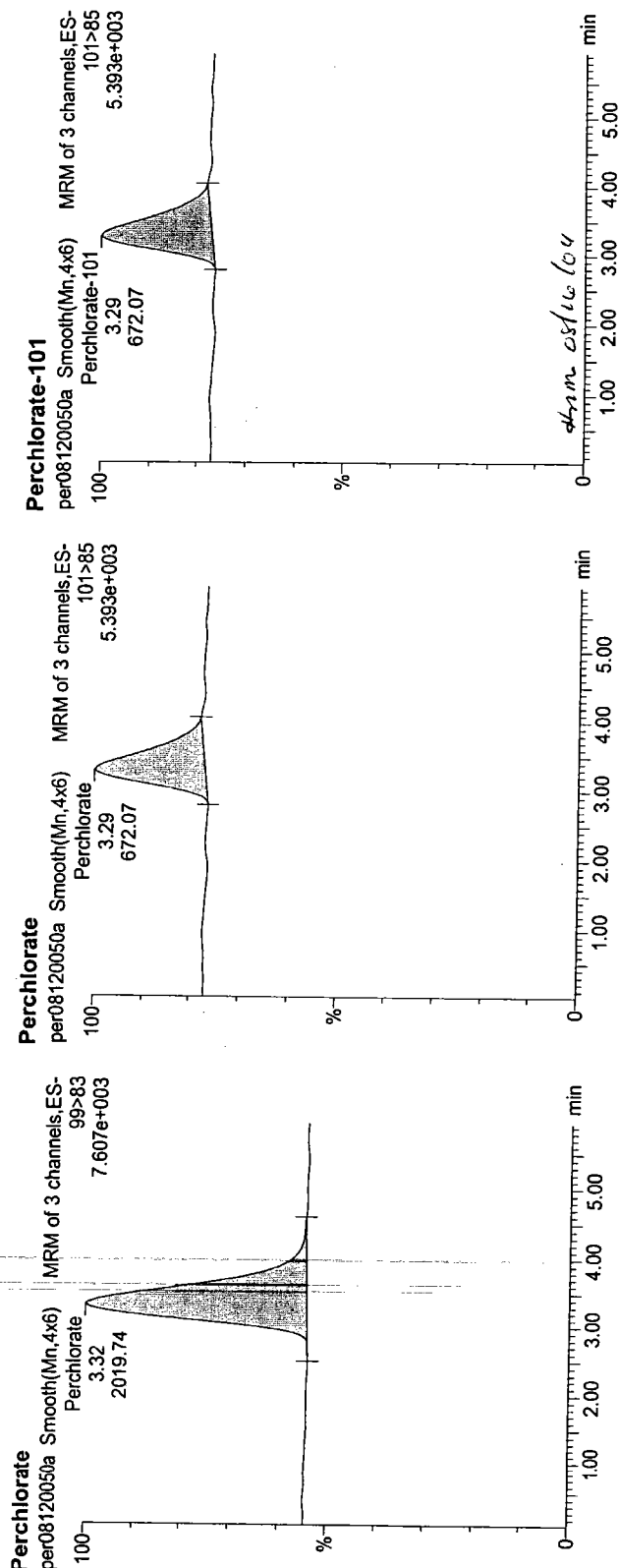
Date: 12-Aug-2004

Time: 21:56:41

ID: WCL040803-06CCV

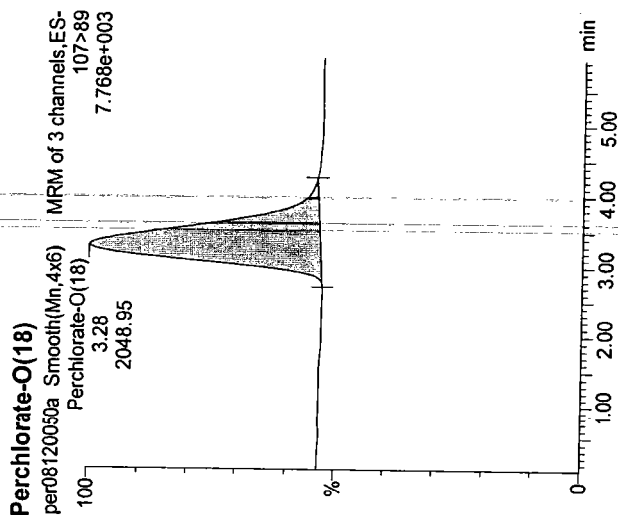
Vial: 3:1,A

User:



Handwritten signature/initials.

MM= Manually Modified



#	ID	Name	Trace	RT	Area	IS Area	Abs. Resp	Response	Flags	Mod ID	Mod TL	S/N	Conc.	%Rec	Ratio
1	WCL040803-06CCV	Perchlorate	99>83	3.32	2019.736		2019.736	2019.736	bb			48.1	0.5561	111.2	3.01
2	WCL040803-06CCV	Perchlorate-101	101>85	3.29	672.070		672.070	672.070	bb			124.8	0.5026	100.5	
3	WCL040803-06CCV	Perchlorate-O(18)	107>89	3.28	2048.947		2048.947	2048.947	bb			344.3	0.5345	106.9	

sum 081604

08/13/04

Quantify Sample Report

General Engineering Labs, LLC., Analyst : Janice Willey

Dataset: C:\MASSLYNX\New_Per.PRO\per081304a.qld, Time: Fri Aug 13 12:57:37 2004

Name: C:\MASSLYNX\NEW_PER.PRO\Data\per08130021a

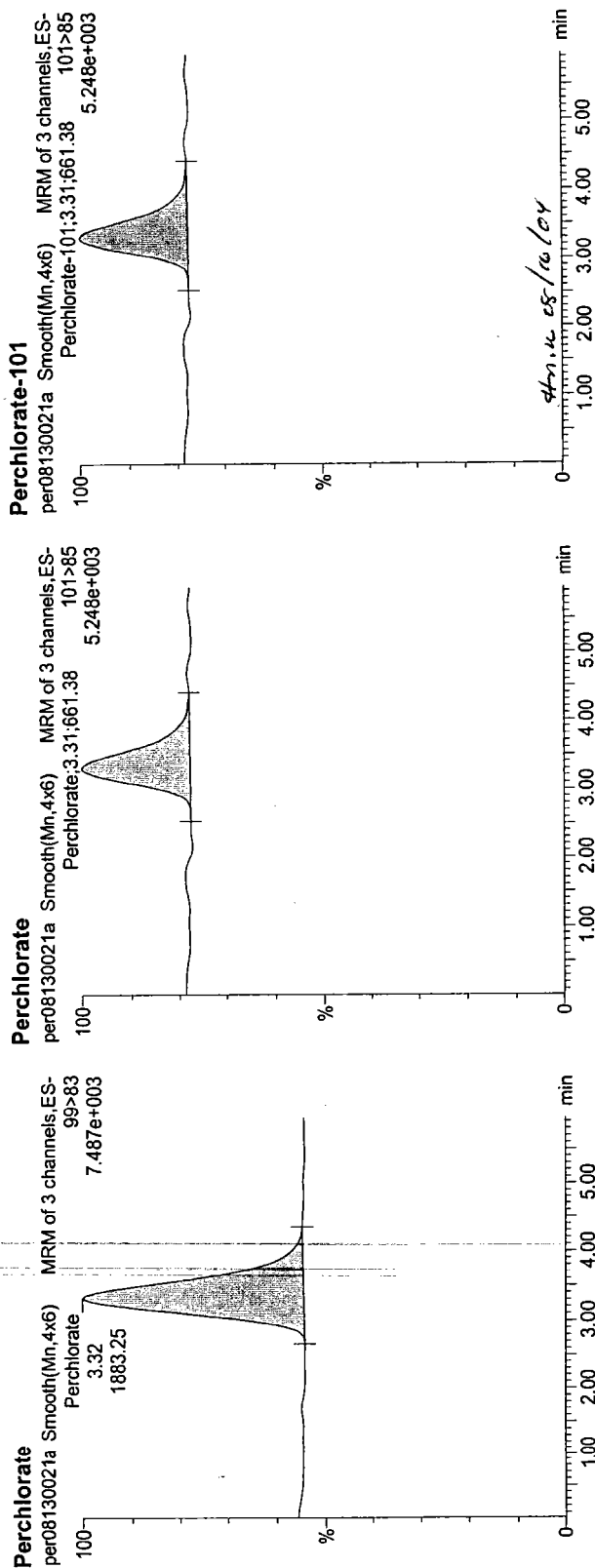
Date: 13-Aug-2004

Time: 10:45:04

ID: WCL040803-06CCV

Vial: 1:2,A

User:



8/13/04

MM= Manually Modified

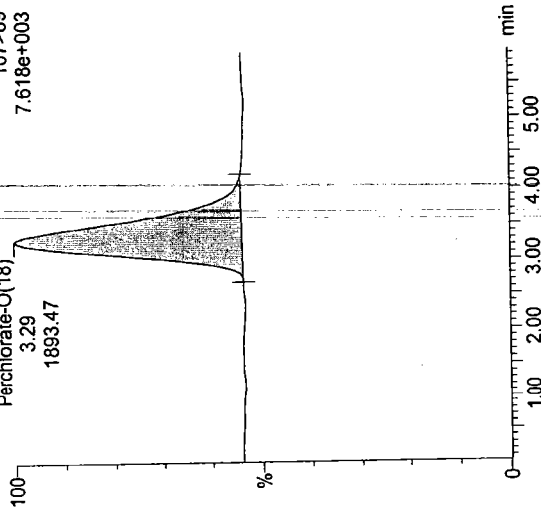
Quantify Sample Report

General Engineering Labs, LLC., Analyst : Janice Willey

Dataset: C:\MASSLYNX\New_Per.PRO\per081304a.qld, Time: Fri Aug 13 12:57:37 2004

Perchlorate-O(18)

per08130021a Smooth(Mn,4x6)
Perchlorate-O(18)
MRM of 3 channels, ES-
107>89
7.618e+003



# ID	Name	Trace	RI	Area	IS Area	Abs.Resp	Response	Flags	Mod.D.	Mod.TI	S/N	Conc	%Rec	Ratio
1	WCL040803-06CCV	Perchlorate	99>83	1883.246	1883.246	1883.246	1883.246	bb			268.0	0.5255	105.1	2.85
2	WCL040803-06CCV	Perchlorate-101	101>85	661.383	661.383	661.383	661.383	bb			125.6	0.5289	105.8	
3	WCL040803-06CCV	Perchlorate-O(18)	107>89	1893.474	1893.474	1893.474	1893.474	bb			1169.7	0.5344	106.9	

from 08/16/04

08/16/04

Quantify Sample Report

General Engineering Labs, LLC., Analyst : Janice Willey

Dataset: C:\MASSLYNX\New_Per.PRO\per081304a.qld, Time: Fri Aug 13 12:57:37 2004

Name: C:\MASSLYNX\NEW_PER.PRO\Data\per08130029a

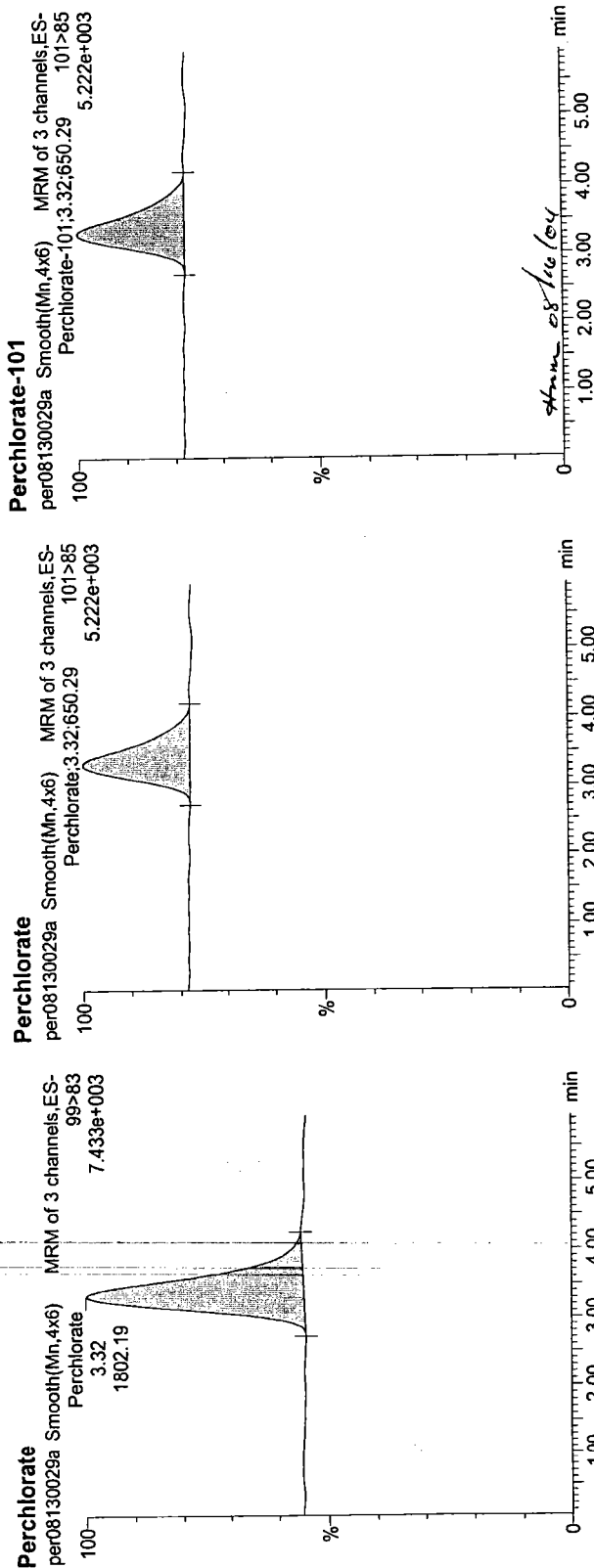
Date: 13-Aug-2004

Time: 11:43:38

ID: WCL040803-06CCCV

Vial: 1:2,A

User:

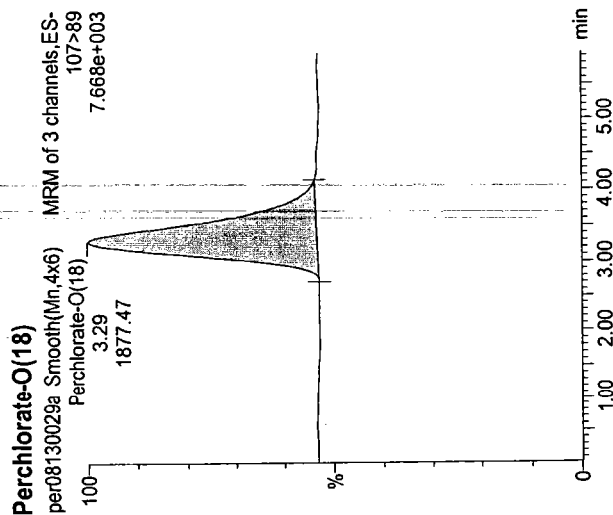


8/13/04

MM= Manually Modified

Quantify Sample Report
General Engineering Labs, LLC., Analyst : Janice Willey

Dataset: C:\MASSLYNX\New_Per.PRO\per081304a.qld, Time: Fri Aug 13 12:57:37 2004



#	ID	Name	Trace	RT	Area	IS Area	Abs Resp	Response	Flags	Mod ID	Mod TL	S/N	Conc	%Rec	Ratio
1	WCL040803-06CCV	Perchlorate	99>83	3.32	1802.194	1802.194	1802.194	1802.194	bb			280.1	0.5028	100.6	2.77
2	WCL040803-06CCV	Perchlorate-101	101>85	3.32	650.287	650.287	650.287	650.287	bb			115.4	0.5201	104.0	
3	WCL040803-06CCV	Perchlorate-O(18)	107>89	3.29	1877.470	1877.470	1877.470	1877.470	bb			545.0	0.5299	106.0	

Chlorofluor

8/13/04 JFW

Perchlorate MDL Verification

Lab Name: General Engineering Laboratories GEL Job No.(SDG): 118884

Lab Code: GEL

Reporting Units: ug/L

Analyte	True	Found	%Rec	Date Analyzed	GEL File Id
Perchlorate	.05	.06	111.8	12-AUG-04 17:11	per08120010a
Perchlorate Isotope Ratio		3.08		12-AUG-04 17:11	per08120010a
Perchlorate-101	.05	.05	98.71	12-AUG-04 17:11	per08120010a
Perchlorate	.05	.05	90.12	12-AUG-04 20:39	per08120039a
Perchlorate Isotope Ratio		2.44		12-AUG-04 20:39	per08120039a
Perchlorate-101	.05	.05	100.18	12-AUG-04 20:39	per08120039a
Perchlorate	.05	.06	124.88	12-AUG-04 22:10	per08120052a
Perchlorate Isotope Ratio		3.75		12-AUG-04 22:10	per08120052a
Perchlorate-101	.05	.05	90.55	12-AUG-04 22:10	per08120052a
Perchlorate	.05	.04	87.11	13-AUG-04 09:15	per08130010a
Perchlorate Isotope Ratio		2.62		13-AUG-04 09:15	per08130010a

Form 3

P perchlorate MDL Verification

P perchlorate-101	.05	.05	95.12	13-AUG-04 09:15	per08130010a
P perchlorate	.05	.06	111.92	13-AUG-04 10:59	per08130023a
P perchlorate Isotope Ratio		1.98		13-AUG-04 10:59	per08130023a
P perchlorate-101	.05	.08	162.18	13-AUG-04 10:59	per08130023a
P perchlorate	.05	.06	128	13-AUG-04 12:00	per08130031a
P perchlorate Isotope Ratio		3.28		13-AUG-04 12:00	per08130031a
P perchlorate-101	.05	.06	111.81	13-AUG-04 12:00	per08130031a

Quantify Sample Report
General Engineering Labs, LLC., Analyst : Janice Willey

Dataset: C:\MASSLYNX\New_Per.PRO\per081204a.qld, Time: Fri Aug 13 07:51:42 2004

Name: C:\MASSLYNX\NEW_PER.PRO\Data\per08120010a

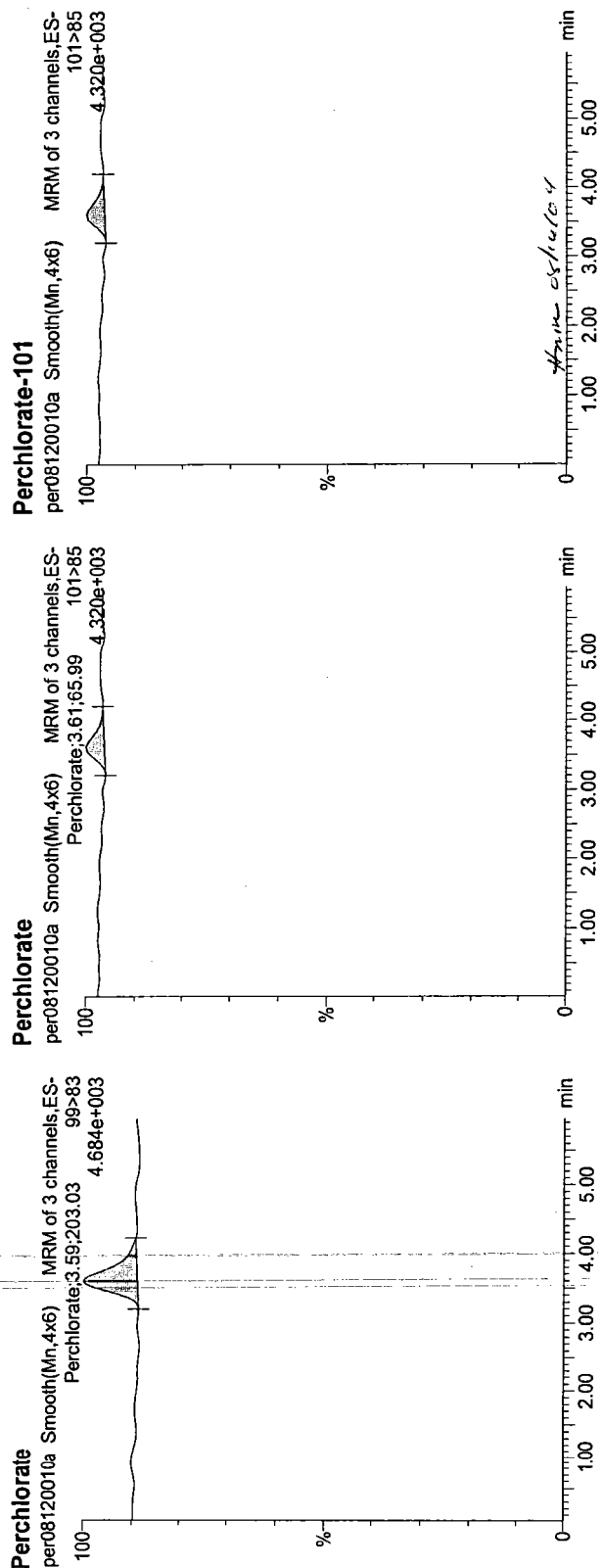
Date: 12-Aug-2004

Time: 17:11:41

ID: WCL040803-07CRI

Vial: 1:2,B

User:

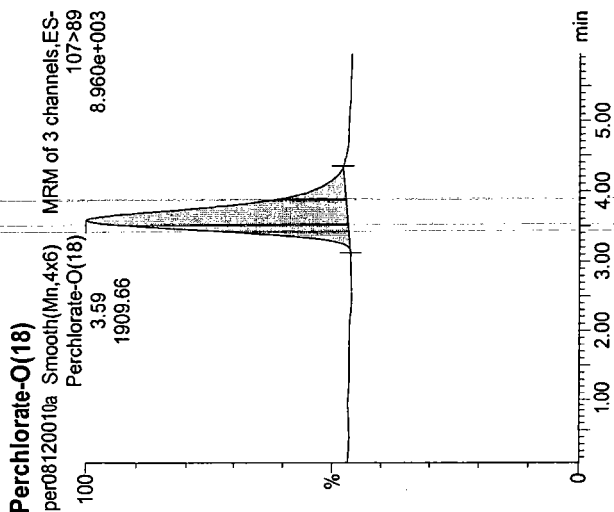


6/13/04

MM= Manually Modified

Quantify Sample Report
General Engineering Labs, LLC., Analyst : Janice Willey

Dataset: C:\MASSLYNX\New_Per.PRO\per081204a.qld, Time: Fri Aug 13 07:51:42 2004



#	ID	Name	Trace	RT	Area	IS Area	Abs. Resp	Response	Flags	Mod.D	Mod.TI	S/N	Conc.	%Rec	Ratio
1	WCL040803-07CRI	Perchlorate	99>83	3.59	203.031		203.031	203.031	bb			145.2	0.0559	111.8	3.08
2	WCL040803-07CRI	Perchlorate-101	101>85	3.61	65.989		65.989	65.989	bb			15.6	0.0494	98.7	
3	WCL040803-07CRI	Perchlorate-O(18)	107>89	3.59	1909.655		1909.655	1909.655	bb			1051.0	0.4982	99.6	

4m-08/13/04

8/13/04

Printed: Fri Aug 13 07:53:17 2004, Page 77 of 141

Quantify Sample Report
General Engineering Labs, LLC., Analyst: Janice Willey

Dataset: C:\MASSLYNX\New_Per.PRO\per081204a.qld, Time: Fri Aug 13 07:51:42 2004

Name: C:\MASSLYNX\NEW_PER.PRO\data\per08120039a

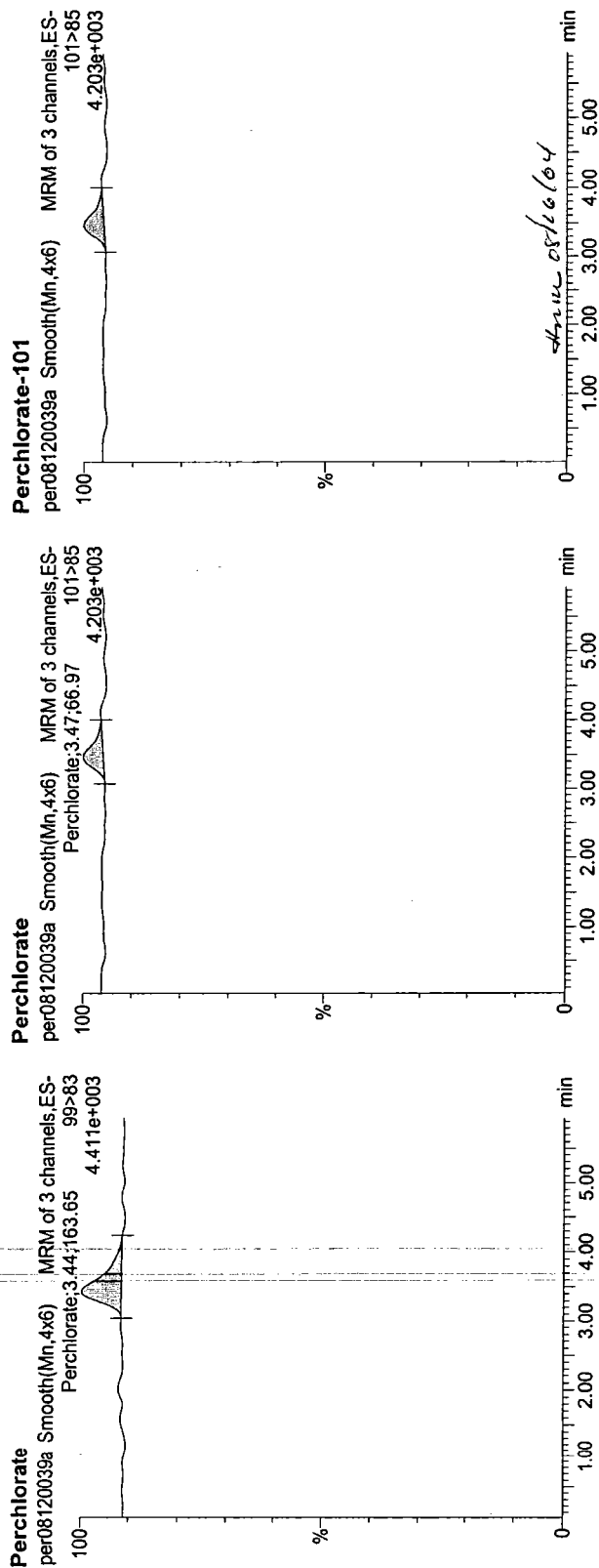
Date: 12-Aug-2004

Time: 20:39:46

ID: WCL040803-07CRI

Vial: 3:1,C

User:

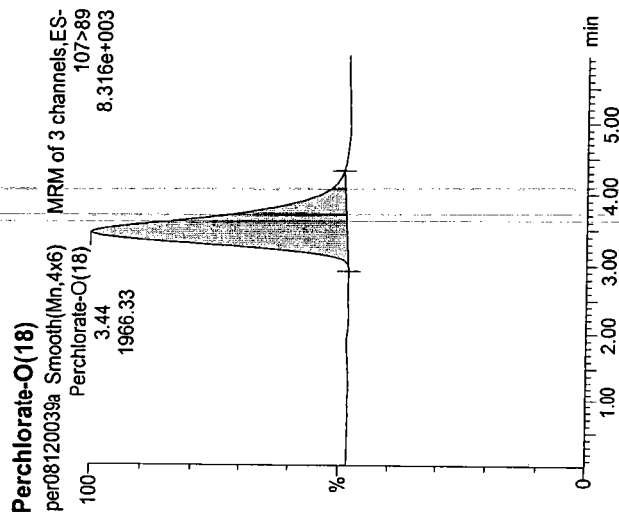


4/15/04

MM= Manually Modified

Quantify Sample Report
General Engineering Labs, LLC., Analyst : Janice Willey

Dataset: C:\MASSLYN\New_Per\PRO\per081204a.qld, Time: Fri Aug 13 07:51:42 2004



#	ID	Name	Trace	RT	Area	IS Area	Abs Resp	Response	Flags	Mod.D	Mod.TL	S/N	Conc	%Rec	Ratio
1	WCL040803-07CRI	Perchlorate	99>83	3.44	163.654		163.654	163.654	bb			63.5	0.0451	90.1	2.44
2	WCL040803-07CRI	Perchlorate-101	101>85	3.47	66.972		66.972	66.972	bb			19.2	0.0501	100.2	
3	WCL040803-07CRI	Perchlorate-O(18)	107>89	3.44	1966.332		1966.332	1966.332	bb			157.3	0.5129	102.6	

chem 081204

per081204

Quantify Sample Report

General Engineering Labs, LLC., Analyst : Janice Willey

Dataset: C:\MASSLYNX\New_Per.PRO\per081204a.qld, Time: Fri Aug 13 09:20:59 2004

Method: C:\MASSLYNX\New_Per.PRO\MethDB\per081204a.mdb, Time: Thu Aug 12 14:44:30 2004
Calibration: Untitled, Time: Fri Aug 13 09:20:59 2004

Name: C:\MASSLYNX\NEW_PER.PRO\Data\per08120052a

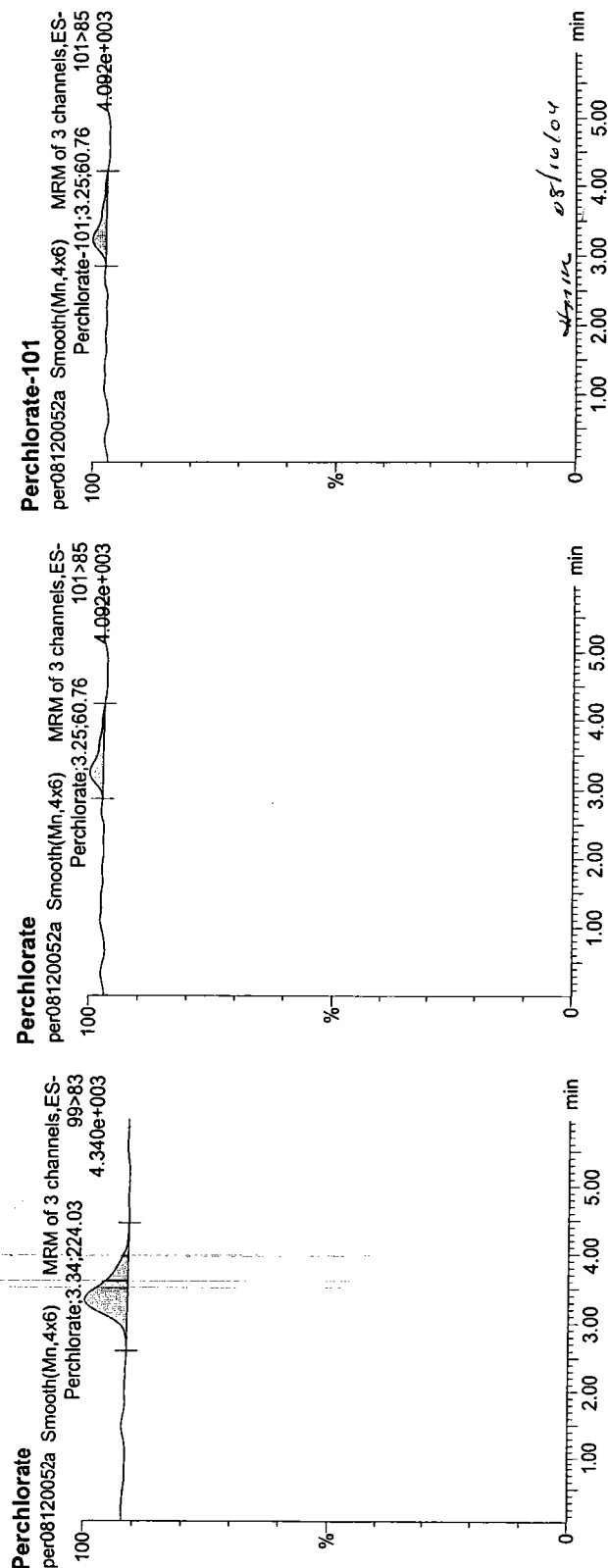
Date: 12-Aug-2004

Time: 22:10:40

ID: WCL040803-07CRI

Vial: 3:1,C

User:

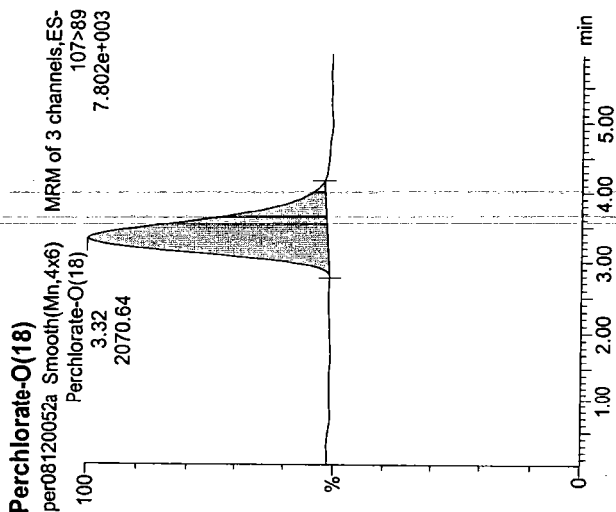


h/c/k

MM= Manually Modified

Quantify Sample Report
General Engineering Labs, LLC., Analyst : Janice Willey

Dataset: C:\MASSLYNX\New_Per\PRO\per081204a.qld, Time: Fri Aug 13 09:20:59 2004



#	ID	Name	Trace	RT	Area	IS Area	Abs Resp	Response	Flags	Mod ID	Mod TL	S/N	Conc	% Rec	Ratio
1	WCL040803-07CRI	Perchlorate	99>83	3.34	224.028		224.028	224.028	bb			52.1	0.0617	123.4	3.69
2	WCL040803-07CRI	Perchlorate-101	101>85	3.25	60.764		60.764	60.764	bb			10.9	0.0454	90.9	
3	WCL040803-07CRI	Perchlorate-O(18)	107>89	3.32	2070.636		2070.636	2070.636	bb			630.7	0.5402	108.0	

Handwritten: 28/16/04

Handwritten: 8/13/04

Quantify Sample Report

General Engineering Labs, LLC., Analyst : Janice Willey

Dataset: C:\MASSLYNX\New_Per.PRO\per081304a.qld, Time: Fri Aug 13 12:57:37 2004

Name: C:\MASSLYNX\NEW_PER.PRO\Data\per08130010a

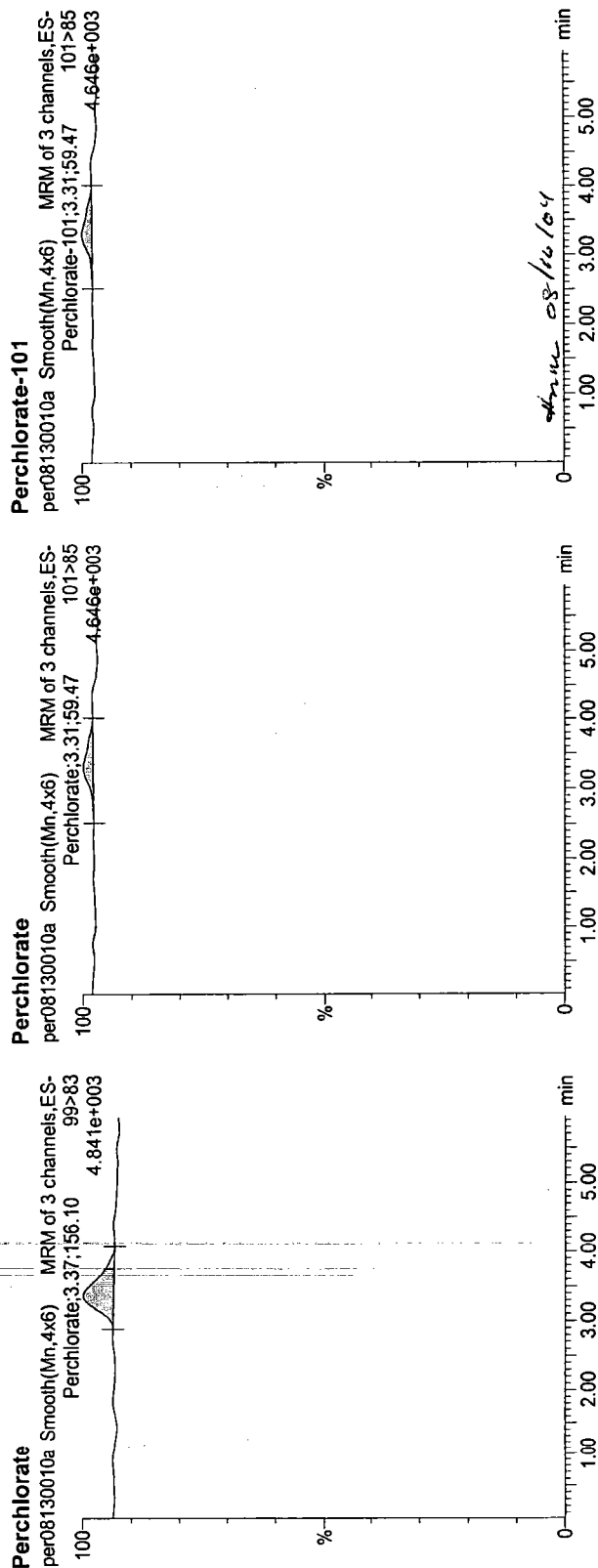
Date: 13-Aug-2004

Time: 09:15:44

ID: WCL040803-07CRI

Vial: 1:2,B

User:

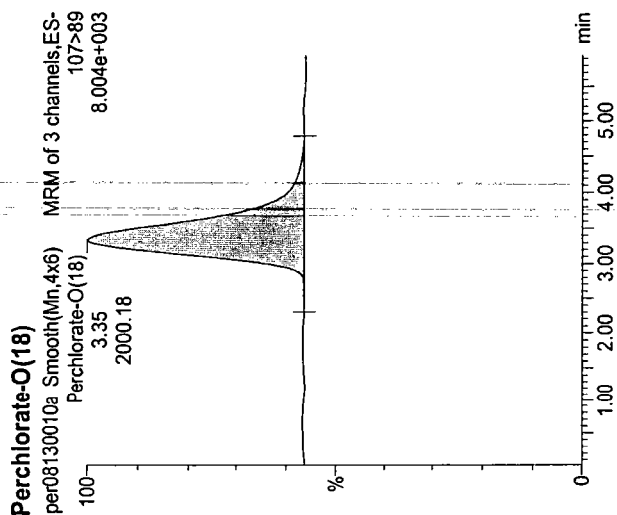


8/13/04

MM= Manually Modified

Quantify Sample Report
General Engineering Labs, LLC., Analyst: Janice Willey

Dataset: C:\MASSLYNX\New_Per.PRO\per081304a.qld, Time: Fri Aug 13 12:57:37 2004



# ID	Name	Trace	RT	Area	IS Area	Abs Resp	Response	Flags	Mod.D	Mod.Ti	S/N	Conc.	% Rec	Ratio
1	WCL040803-07CRI	Perchlorate	99>83	3.37	156.098	156.098	156.098	bb			64.3	0.0436	87.1	2.62
2	WCL040803-07CRI	Perchlorate-101	101>85	3.31	59.471	59.471	59.471	bb			7.6	0.0476	95.1	
3	WCL040803-07CRI	Perchlorate-O(18)	107>89	3.35	2000.181	2000.181	2000.181	bb			320.9	0.5645	112.9	

Ammonium

8/13/04

MM= Manually Modified

Quantify Sample Report

General Engineering Labs, LLC, Analyst : Janice Willey

Dataset: C:\MASSLYNX\New_Per.PRO\per081304a.qld, Time: Fri Aug 13 12:57:37 2004

Name: C:\MASSLYNX\NEW_PER.PRO\Data\per08130023a

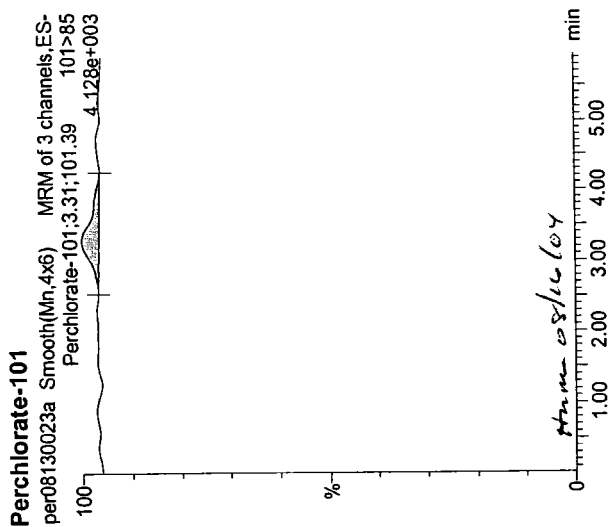
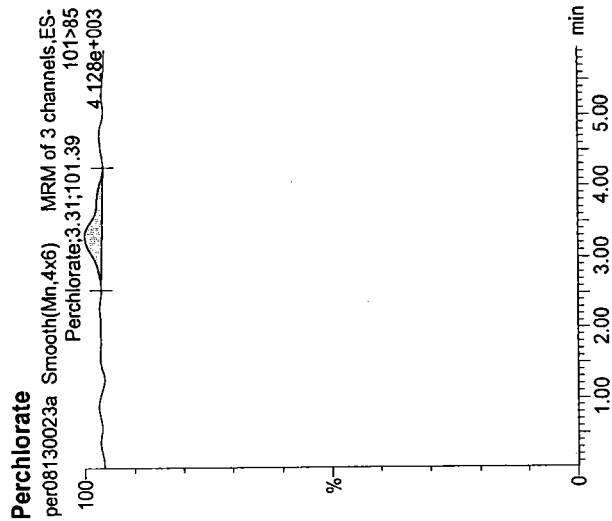
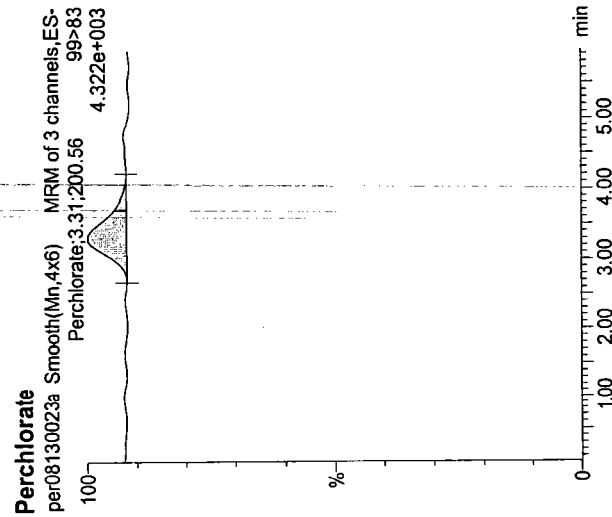
Date: 13-Aug-2004

Time: 10:59:03

ID: WCL040803-07CRI

Vial: 1:2,B

User:

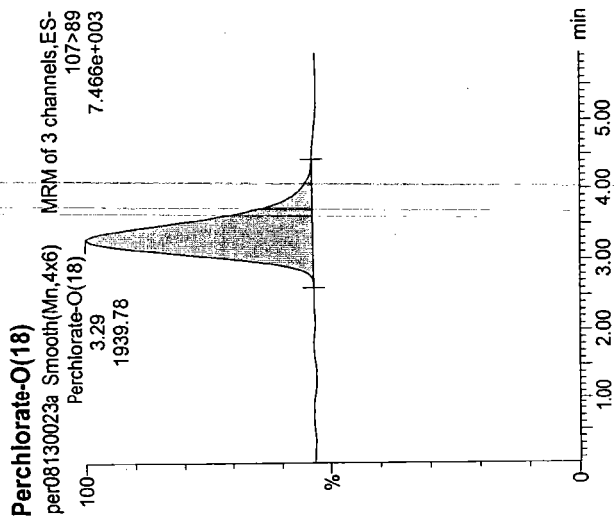


08/16/04

MM= Manually Modified

Quantify Sample Report
General Engineering Labs, LLC., Analyst : Janice Willey

Dataset: C:\MASSLYNX\New_Per.PRO\per081304a.qld, Time: Fri Aug 13 12:57:37 2004



#	ID	Name	Trace	RI	Area	IS Area	Abs.Resp	Response	Flags	Mod.D	Mod.T	S/N	Conc.	%Rec	Ratio
1	WCL040803-07CRI	Perchlorate	99>83	3.31	200.557	200.557	200.557	200.557	bb			17.1	0.0560	111.9	1.98
2	WCL040803-07CRI	Perchlorate-101	101>85	3.31	101.394	101.394	101.394	101.394	bb			37.5	0.0811	162.2	107>89
3	WCL040803-07CRI	Perchlorate-O(18)	107>89	3.29	1939.781	1939.781	1939.781	1939.781	bb			201.0	0.5474	109.5	Handwritten est/6/04

Handwritten signature/initials: 1/3/04

Quantify Sample Report
General Engineering Labs, LLC., Analyst : Janice Willey

Dataset: C:\MASSLYNX\New_Per.PRO\per081304a.qld, Time: Fri Aug 13 12:57:37 2004

Name: C:\MASSLYNX\NEW_PER.PRO\Data\per08130031a

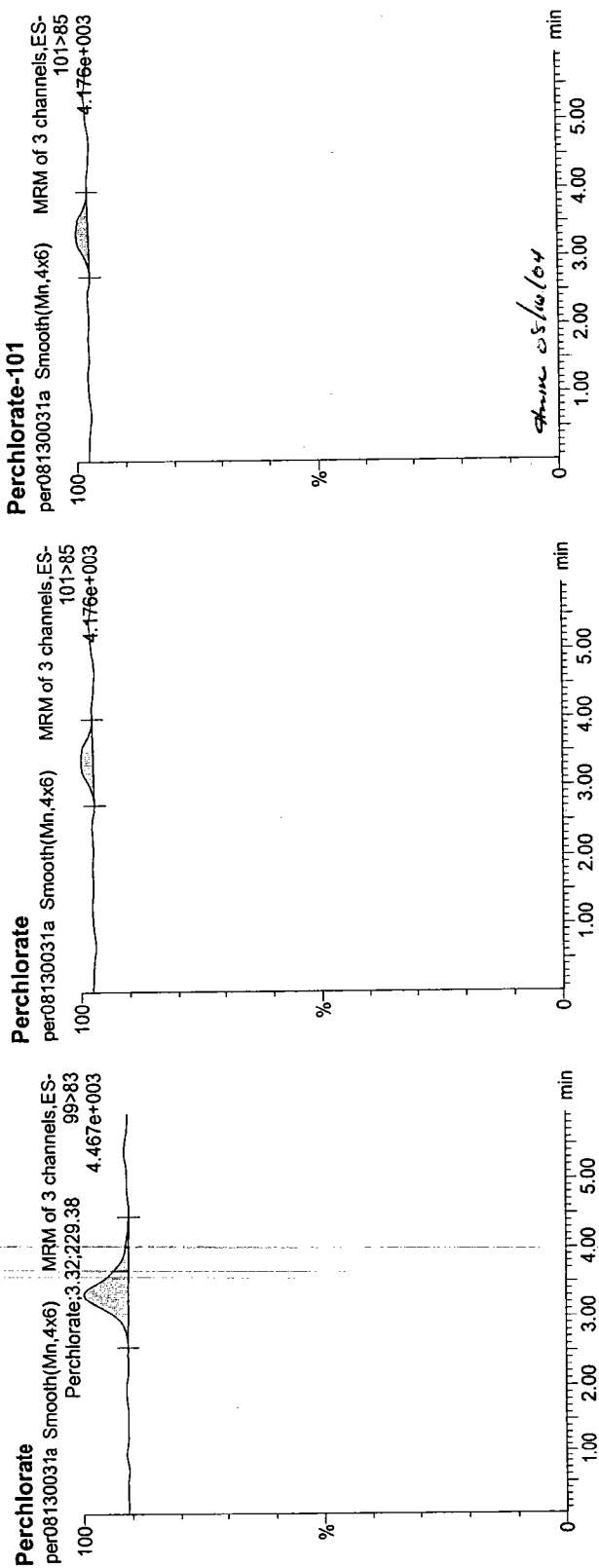
Date: 13-Aug-2004

Time: 12:00:17

ID: WCL040803-07CRI

Vial: 1:2,B

User:

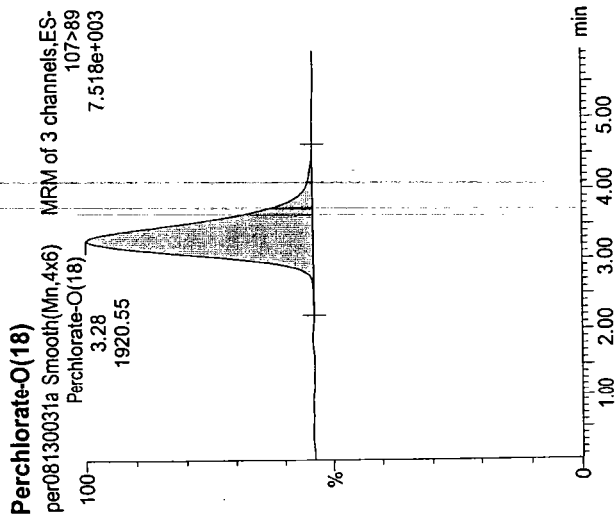


WJF/18

MM= Manually Modified

Quantify Sample Report
General Engineering Labs, LLC., Analyst : Janice Willey

Dataset: C:\MASSLYNX\New_Per.PRO\per081304a.qld, Time: Fri Aug 13 12:57:37 2004



#	ID	Name	Trace	RI	Area	IS Area	Abs Resp	Response	Flags	Mod.D	Mod.TI	S/N	Conc	%Rec	Ratio
1	WCL040803-07CRI	Perchlorate	99>83	3.32	229.378		229.378	229.378	bb			56.2	0.0640	128.0	3.28
2	WCL040803-07CRI	Perchlorate-101	101>85	3.34	69.906		69.906	69.906	bb			24.7	0.0559	111.8	
3	WCL040803-07CRI	Perchlorate-O(18)	107>89	3.28	1920.551		1920.551	1920.551	bb			147.3	0.5420	108.4	

from 08-16-04

✓
11/13/04
JW

QUALITY CONTROL DATA

Form 1

Perchlorate Analysis Data Sheet

Lab Name: General Engineering Laboratories

Lab Code: GEL

Instrument: LCMSMS

Method: SW846 8321A

Matrix: WATER

Extraction Batch ID: 356965

Extraction Type: Filter/DAL

Sample Volume/Weight: 10.0 mL

Concentrated Extract Volume: 10.0

Client Sample No.

MB

Date Received: 12-AUG-04

GEL Job No (SDG): 118884

GEL Sample ID: 1200682086

Date Filtered: 12-AUG-04

Injection Volume (uL): 50

%Solids:

CAS No.	Analyte [^]	MDL	RL	Conc*	Units	Q	Dilution Factor	Date Analyzed	GEL File ID
14797-73-0	Perchlorate	.05	.2	0.050	ug/L	U	1.00	12-AUG-04 20:53	per08120041a

[^] When the analyte name is Perchlorate Isotope Ratio the concentration is a unitless value calculated from the ratio of Perchlorate peak area to Perchlorate-101 peak area. The Perchlorate-101 and isotopic ratio results are provided for qualitative purposes only. The results are used to verify the presence and quantitation of Perchlorate.

*Concentration =

Instrument Value X $\frac{\text{Concentrated Extract Volume}}{\text{Aliquot}}$ X $\frac{1}{\% \text{Solids}}$

Quantify Sample Report

General Engineering Labs, LLC, Analyst : Janice Willey

Dataset: C:\MASSLYNX\New_Per.PRO\per081204a.qld, Time: Fri Aug 13 07:51:42 2004

Name: C:\MASSLYNX\NEW_PER.PRO\Data\per08120041a

Date: 12-Aug-2004

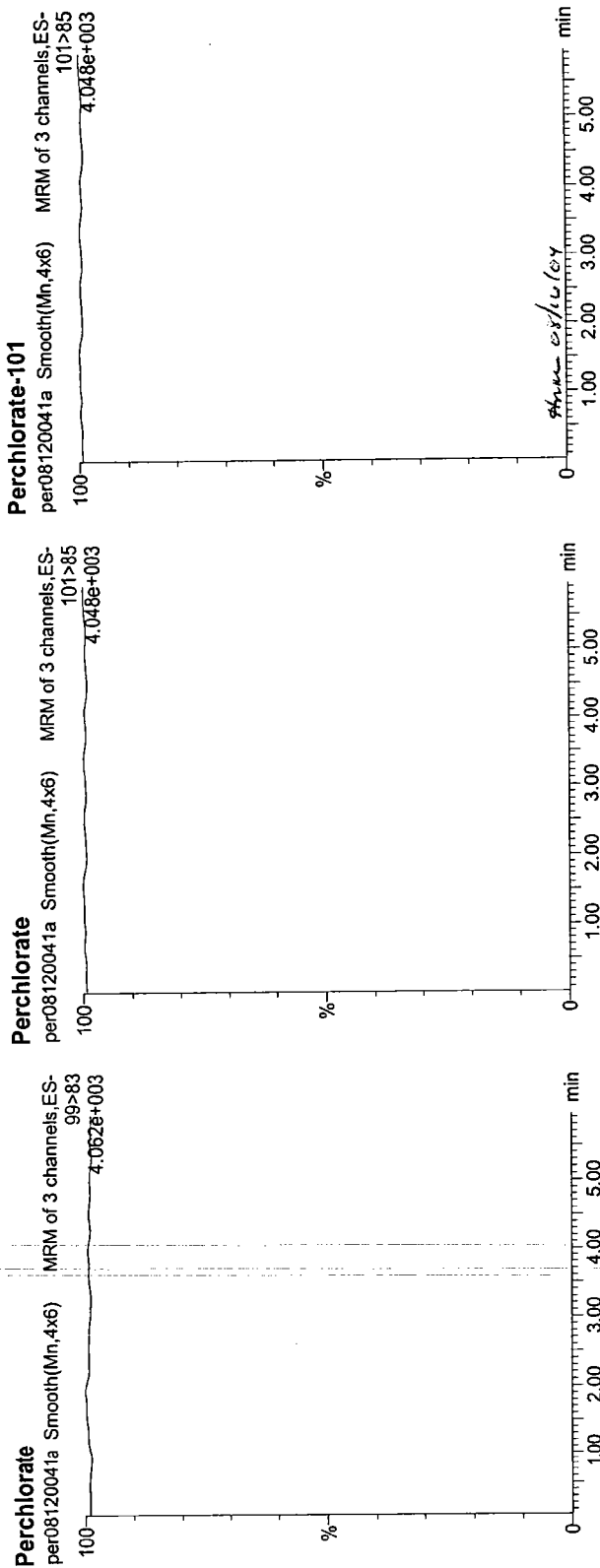
Time: 20:53:45

ID: 1200682086

Vial: 2:5,B

User:

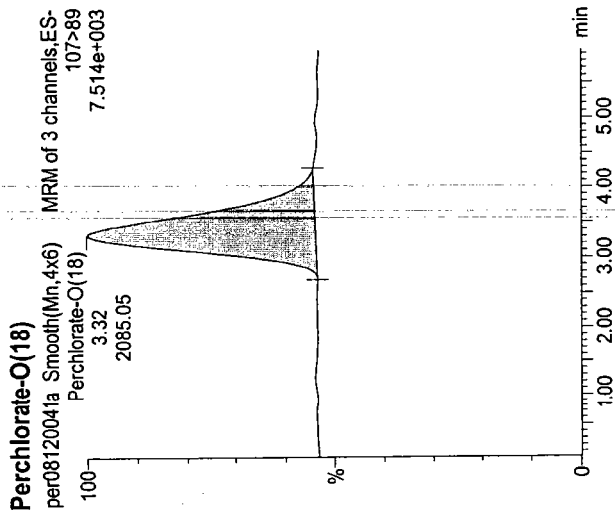
MB114.01 ACTU 1356966



08/11/04

Quantify Sample Report
General Engineering Labs, LLC., Analyst : Janice Willey

Dataset: C:\MASSLYNX\New_Per.PRO\per081204a.qld, Time: Fri Aug 13 07:51:42 2004



# ID	Name	Trace	RT	Area	IS Area	Abs Resp	Response	Flags	Mod.D.	Mod.TL	S/N	Conc.	%Rec	Ratio
1	1200682086	Perchlorate	99>83											
2	1200682086	Perchlorate-101	101>85											
3	1200682086	Perchlorate-O(18)	107>89	3.32	2085.047	2085.047	2085.047	bb			232.1	0.5439	108.8	

m131.14201ACTL1356464

Jgs11ud4

Form 1

Perchlorate Analysis Data Sheet

Lab Name: General Engineering Laboratories
 Lab Code: GEL
 Instrument: LCMSMS
 Method: SW846 8321A
 Matrix: WATER
 Extraction Batch ID: 356965
 Extraction Type: Filter/DAI
 Sample Volume/Weight: 10.0 mL
 Concentrated Extract Volume: 10.0
 Client Sample No. LCS
 Date Received: 12-AUG-04
 GEL Job No (SDG): 118884
 GEL Sample ID: 1200682089
 Date Filtered: 12-AUG-04
 Injection Volume (uL): 50
 % Solids:

CAS No.	Analyte [^]	MDL	RL	Conc*	Units	Q	Dilution Factor	Date Analyzed	GEL File ID
14797-73-0	Perchlorate	.05	.2	0.222	ug/L		1.00	12-AUG-04 21:00	per08120042a

[^] When the analyte name is Perchlorate Isotope Ratio the concentration is a unitless value calculated from the ratio of Perchlorate peak area to Perchlorate-101 peak area. The Perchlorate-101 and isotopic ratio results are provided for qualitative purposes only. The results are used to verify the presence and quantitation of Perchlorate.

*Concentration =

$$\frac{\text{Instrument Value} \times \text{Concentrated Extract Volume}}{\text{Aliquot}} \times \frac{1}{\% \text{Solids}}$$

Quantify Sample Report
General Engineering Labs, LLC., Analyst : Janice Willey

Dataset: C:\MASSLYNX\New_Per\PRO\per081204a.qld, Time: Fri Aug 13 07:51:42 2004

Name: C:\MASSLYNX\NEW_PER\PRO\Data\per08120042a

Date: 12-Aug-2004

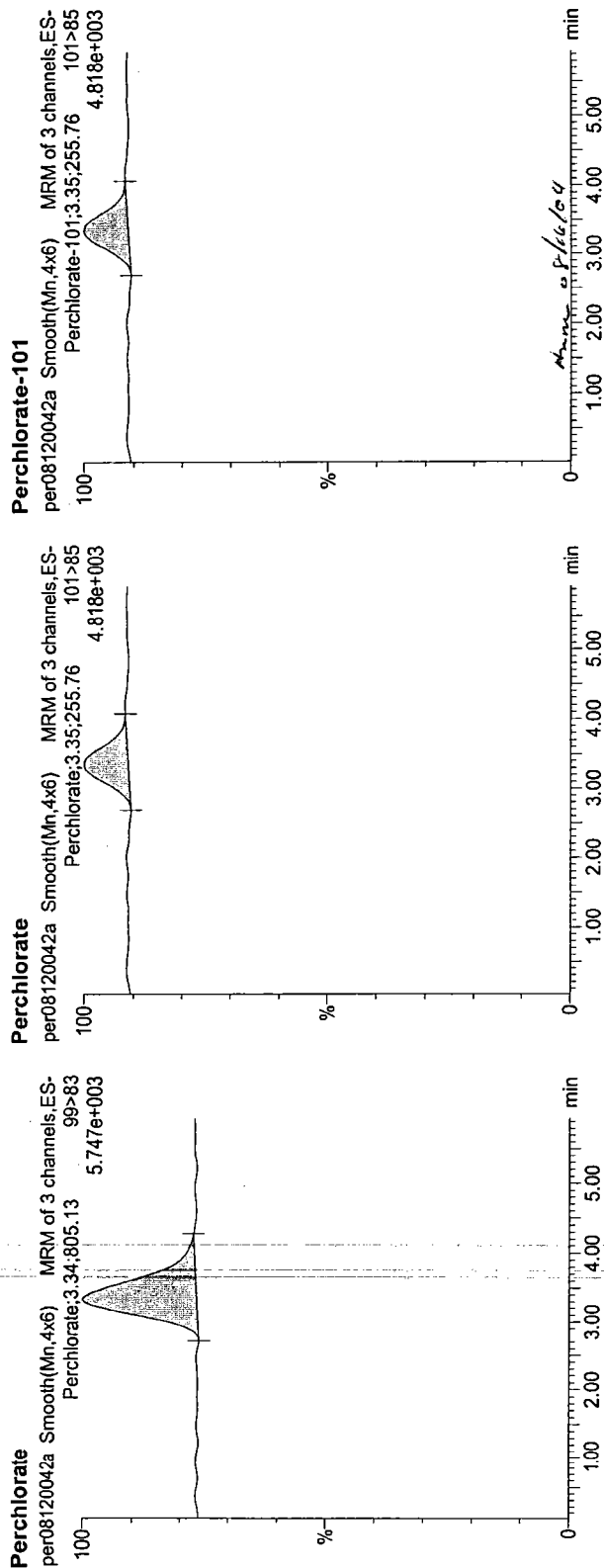
Time: 21:00:44

ID: 1200682089

Vial: 2:5,C

User:

LCS111A01ACTU1356964

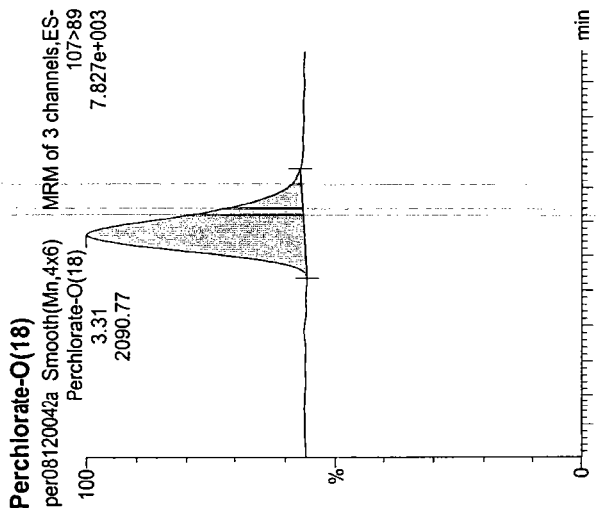


8/11/04

MM= Manually Modified

Quantify Sample Report
General Engineering Labs, LLC., Analyst : Janice Willey

Dataset: C:\MASSLYNX\New_Per.PRO\per081204a.qld, Time: Fri Aug 13 07:51:42 2004



$$\text{Per} \frac{805.133}{3632.08} = 0.2217$$

# ID	Name	Trace	RT	Area	IS Area	Abs Resp	Response	Flags	Mod.D	Mod.T	S/N	Conc.	% Rec	Ratio
1	1200682089	Perchlorate	99>83	805.133	805.133	805.133	805.133	bb			157.8	0.2217	110.8	3.15
2	1200682089	Perchlorate-101	101>85	255.758	255.758	255.758	255.758	bb			58.1	0.1913	95.6	
3	1200682089	Perchlorate-O(18)	107>89	2090.766	2090.766	2090.766	2090.766	bb			384.3	0.5454	109.1	

Handwritten: *per081204*

Handwritten: *LC5114.01 ACN/350960*

Handwritten: *9811664*

Perchlorate Analysis Data Sheet

Lab Name: General Engineering Laboratories

Lab Code: GEL

Instrument: LCMSMS

Method: SW846 8321A Modified

Matrix: WATER

Extraction Batch ID: 356965

Extraction Type: Filter/DAI

Sample Volume/Weight: 10.0 mL

Concentrated Extract Volume: 10.0

Client Sample No.

RW0804-658-LakeviewDrMS

Date Received: 11-AUG-04

GEL Job No (SDG): 118884

GEL Sample ID: 1200682087

Date Filtered: 12-AUG-04

Injection Volume (uL): 50

% Solids:

CAS No.	Analyte [^]	MDL	RL	Conc*	Units	Q	Dilution Factor	Date Analyzed	GEL File ID
14797-73-0	Perchlorate	.05	.2	0.433	ug/L		1.00	12-AUG-04 21:14	per08120044a

[^] When the analyte name is Perchlorate Isotope Ratio the concentration is a unitless value calculated from the ratio of Perchlorate peak area to Perchlorate-101 peak area. The Perchlorate-101 and isotopic ratio results are provided for qualitative purposes only. The results are used to verify the presence and quantitation of Perchlorate.

*Concentration =

Instrument Value X $\frac{\text{Concentrated Extract Volume}}{\text{Aliquot}}$ X $\frac{1}{\% \text{Solids}}$

Quantify Sample Report
General Engineering Labs, LLC., Analyst : Janice Willey

Dataset: C:\MASSLYNX\New_Per.PRO\per081204a.qld, Time: Fri Aug 13 07:51:42 2004

Name: C:\MASSLYNX\NEW_PER.PRO\Data\per08120044a

Date: 12-Aug-2004

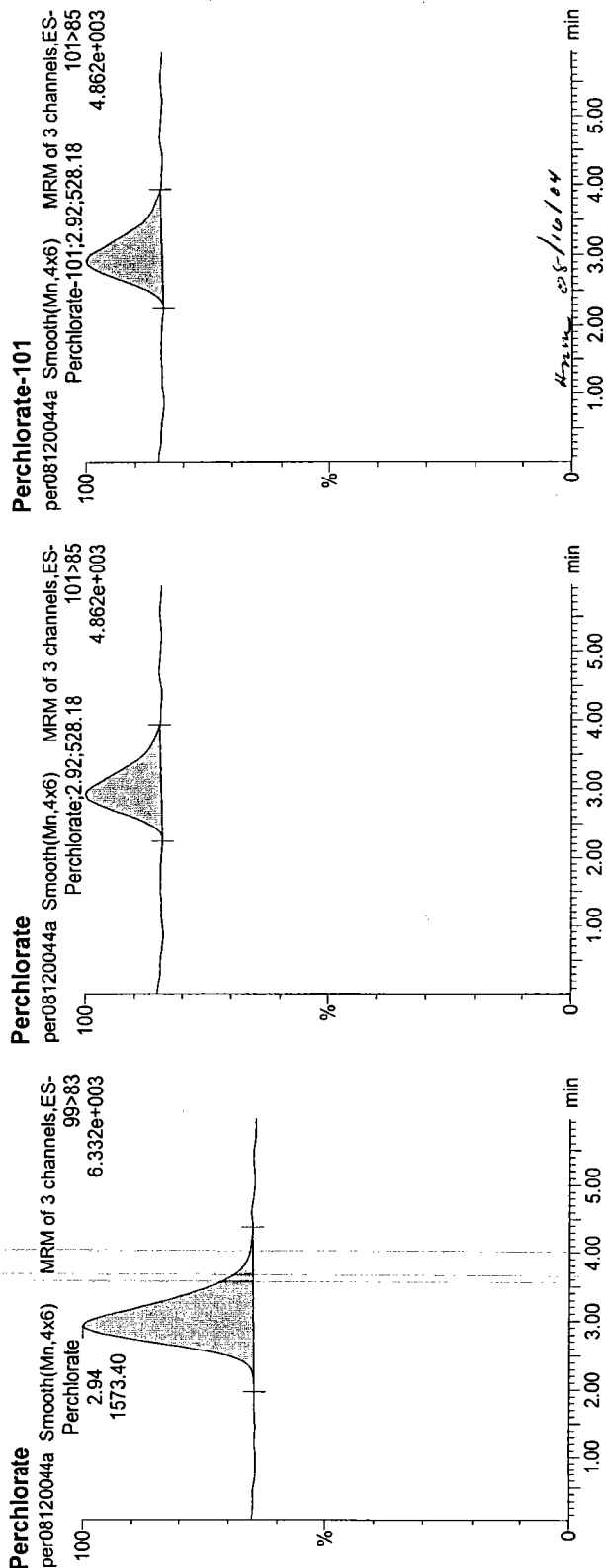
Time: 21:14:44

ID: 1200682087

Vial: 2:5.E

User:

118884001ms) 114.01 ACTL 1356966

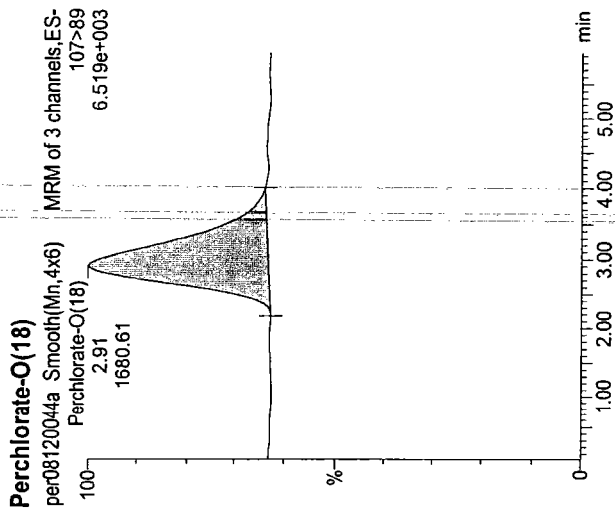


8/16/04

MM= Manually Modified

Quantify Sample Report
General Engineering Labs, LLC., Analyst : Janice Willey

Dataset: C:\MASSLYNX\New_Per.PRO\per081204a.qld, Time: Fri Aug 13 07:51:42 2004



# ID	Name	Trace	RT	Area	IS Area	Abs.Resp	Response	Flags	Mod.D	Mod.TI	SIN	Conc	%Rec	Ratio
1	1200682087	Perchlorate	99>83	2.94	1573.399	1573.399	1573.399	bb			130.6	0.4332	216.6	2.98
2	1200682087	Perchlorate-101	101>85	2.92	528.181	528.181	528.181	bb			45.6	0.3950	197.5	
3	1200682087	Perchlorate-O(18)	107>89	2.91	1680.609	1680.609	1680.609	bb			15.7	0.4384	87.7	

sum 88/604

118884001ms1114201 ACT 1356966

08/11/04

Perchlorate Analysis Data Sheet

Lab Name: General Engineering Laboratories

Lab Code: GEL

Instrument: LCMSMS

Method: SW846 8321A Modified

Matrix: WATER

Extraction Batch ID: 356965

Extraction Type: Filter/DAI

Sample Volume/Weight: 10.0 mL

Concentrated Extract Volume: 10.0

Client Sample No.

RW0804-658-LakeviewDrMMSD

Date Received: 11-AUG-04

GEL Job No (SDG): 118884

GEL Sample ID: 1200682088

Date Filtered: 12-AUG-04

Injection Volume (uL): 50

% Solids:

CAS No.	Analyte [^]	MDL	RL	Conc*	Units	Q	Dilution Factor	Date Analyzed	GEL File ID
14797-73-0	Perchlorate	.05	.2	0.450	ug/L		1.00	12-AUG-04 21:21	per08120045a

[^] When the analyte name is Perchlorate Isotope Ratio the concentration is a unitless value calculated from the ratio of Perchlorate peak area to Perchlorate-101 peak area. The Perchlorate-101 and isotopic ratio results are provided for qualitative purposes only. The results are used to verify the presence and quantitation of Perchlorate.

*Concentration =

Instrument Value X $\frac{\text{Concentrated Extract Volume}}{\text{Aliquot}}$ X $\frac{1}{\% \text{ Solids}}$

Quantify Sample Report

General Engineering Labs, LLC., Analyst : Janice Willey

Dataset: C:\MASSLYNX\New_Per.PRO\per081204a.qld, Time: Fri Aug 13 07:51:42 2004

Name: C:\MASSLYNX\NEW_PER.PRO\Data\per08120045a

Date: 12-Aug-2004

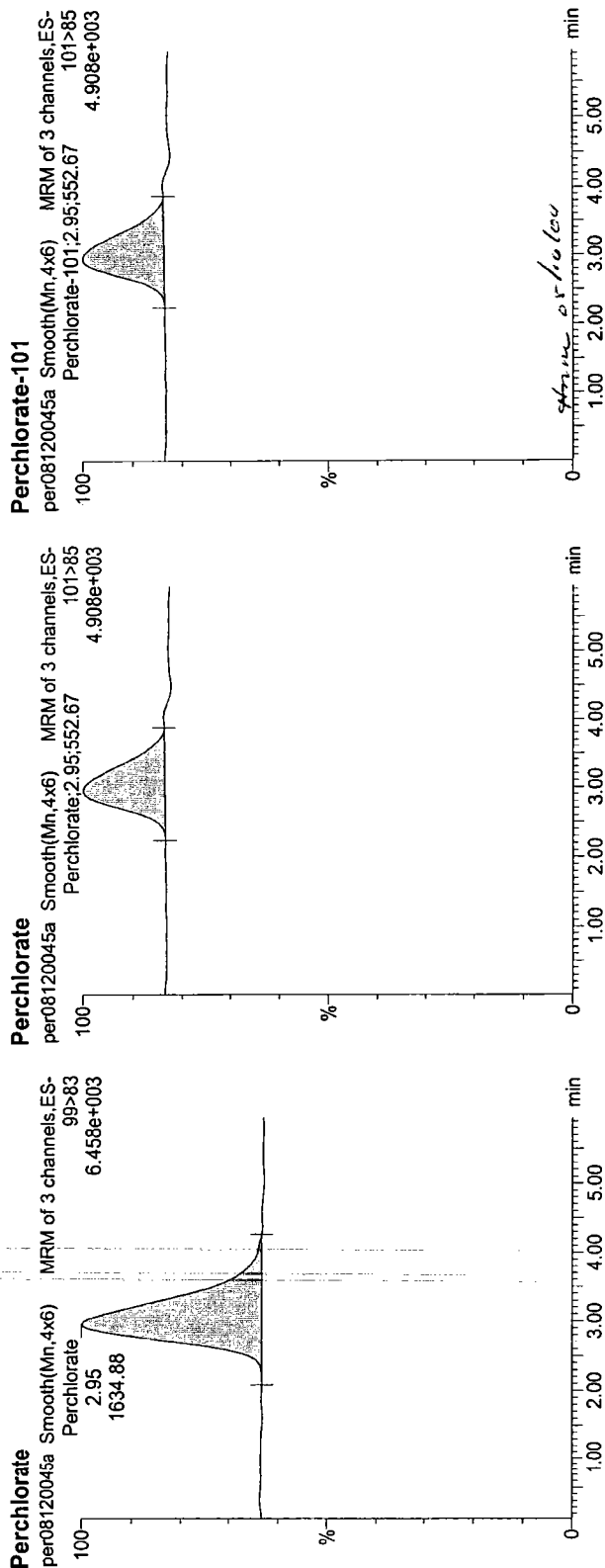
Time: 21:21:43

ID: 1200682088

Vial: 2:5,F

User:

118884001msol 114.01 ACTL 1356960

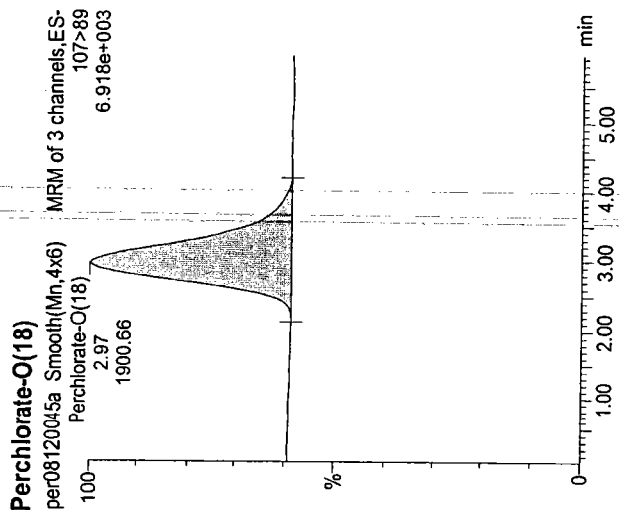


9811614

MM= Manually Modified

Quantify Sample Report
General Engineering Labs, LLC., Analyst : Janice Willey

Dataset: C:\MASSLYNX\New_Per.PRO\per081204a.qld, Time: Fri Aug 13 07:51:42 2004



# ID	Name	Trace	RT	Area	IS Area	Abs.Resp	Response	Flags	Mod.D...	Mod.TI...	S/N	Conc.	%Rec	Ratio
1	1200682088	Perchlorate	99>83	2.95	1634.876	1634.876	1634.876	bb			209.4	0.4501	225.1	2.96
2	1200682088	Perchlorate-101	101>85	2.95	552.674	552.674	552.674	bb			28.4	0.4134	206.7	
3	1200682088	Perchlorate-O(18)	107>89	2.97	1900.661	1900.661	1900.661	bb			325.9	0.4958	99.2	98.2 %

Sum of 100%

118884001msD\1142\356964ACT

981161m

MISCELLANEOUS DATA

Isotope Ratio Criteria

Average Isotope Ratio

2.93

Standard Deviation

0.19

Sample Between the MDL and RDL (0.050-0.20ug/L)

Control Limits : 2.36-3.50

Sample Above the RDL (0.20ug/L)

Control Limits : 2.55-3.31

Tune Criteria

The tuning solution is introduced directly into the mass spectrometer using the ESI interface in the positive ion mode. The mass range scanned is 20 to 1100 amu using at least six scans. The observed mass for the target compound in the daily calibration standards must be within 0.2 amu of the expected value. If it is greater than 0.2 amu, then a mass calibration is performed and the instrument is re-calibrated.

GEL ORGANIC RUN LOG

Date: 08/12/2004
 Extr. Injection Volume: 50uL
 Sequence Number: 081204PERA
 Initial Calibration Date(s): 08/12/2004

INSTRUMENT ID: LCMSMS

Method: 8321A MODIFIED
 Int. Std. UCL040524-01.2
 Mobile Phase Lot#: 225215, 234631
 Standard-Samp Reagent Lot#: 225215

Reviewed BY: *Amr*
 Date: 8/15/04
 SOP: GL-OA-E-056Rev.6
 Alt Check Std. ID: WCL040803-06

DataFile	Sample	Analyst	Injection Date	Batch	SDG	Dilution	Client	Comments	QC_Flag
per08120001a	IPB001	JLW	8/12/04 16:06				1		B
per08120002a	IPB001	JLW	8/12/04 16:15				1		B
per08120003a	WCLICAL-01	JLW	8/12/04 16:22				1		I
per08120004a	WCLICAL-02	JLW	8/12/04 16:29				1		I
per08120005a	WCLICAL-03	JLW	8/12/04 16:36				1		I
per08120006a	WCLICAL-04	JLW	8/12/04 16:43				1		I
per08120007a	WCLICAL-05	JLW	8/12/04 16:50				1		I
per08120008a	WCLICV	JLW	8/12/04 16:57				1	passes	C
per08120009a	IPB002	JLW	8/12/04 17:04				1		C
per08120010a	WCLCRI	JLW	8/12/04 17:11				1	passes	C
per08120011a	1200677365	JLW	8/12/04 17:18	354989	various		1	various use	S
per08120012a	1200677359	JLW	8/12/04 17:28	354989	various		1	various use	S
per08120013a	1200677364	JLW	8/12/04 17:35	354989	various		1	various use	S
per08120014a	118248001	JLW	8/12/04 17:42	354989	118248		1	PINL use	S
per08120015a	118248002	JLW	8/12/04 17:49	354989	118248		1	PINL use	S
per08120016a	1200677360	JLW	8/12/04 17:56	354989	118248		1	PINL use	S
per08120017a	1200677362	JLW	8/12/04 18:03	354989	118248		1	PINL use	S
per08120018a	118248003	JLW	8/12/04 18:10	354989	118248		1	PINL use	S
per08120019a	118248004	JLW	8/12/04 18:17	354989	118248		2	PINL use	S
per08120020a	WCLCCV	JLW	8/12/04 18:24				1	passes	C
per08120021a	IPB003	JLW	8/12/04 18:31				1		B
per08120022a	WCLCRI	JLW	8/12/04 18:38				1	passes	C
per08120023a	118248005	JLW	8/12/04 18:45	354989	118248		1	duse-rr on 8/13/4	S
per08120024a	118248006	JLW	8/12/04 18:52	354989	118248		1	duse-rr on 8/13/4	S
per08120025a	118248007	JLW	8/12/04 18:59	354989	118248		1	duse-rr on 8/13/4	S
per08120026a	118248008	JLW	8/12/04 19:06	354989	118248		1	duse-rr on 8/13/4	S
per08120027a	WCLCCV	JLW	8/12/04 19:13				1	fails	C
per08120028a	IPB004	JLW	8/12/04 19:20				1		B
per08120029a	WCLCRI	JLW	8/12/04 19:27				1	passes	C
per08120030a	117982006	JLW	8/12/04 19:34	354989	117982		10	BATL duse-rr on 8/13/4	S
per08120031a	1200677361	JLW	8/12/04 19:43	354989	117982		10	BATL duse-rr on 8/13/4	S
per08120032a	1200677363	JLW	8/12/04 19:50	354989	117982		10	BATL duse-rr on 8/13/4	S
per08120033a	116882007	JLW	8/12/04 19:57	354989	117982		10	BATL duse-rr on 8/13/4	S
per08120034a	116882008	JLW	8/12/04 20:04	354989	117982		10	BATL duse-rr on 8/13/4	S
per08120035a	116882009	JLW	8/12/04 20:11	354989	117982		10	BATL duse-rr on 8/13/4	S
per08120036a	116882010	JLW	8/12/04 20:18	354989	117982		10	BATL duse-rr on 8/13/4	S
per08120037a	WCLCCV	JLW	8/12/04 20:25				1	passes	C
per08120038a	IPB005	JLW	8/12/04 20:32				1		B
per08120039a	WCLCRI	JLW	8/12/04 20:39				1	passes	C

၅ ၅ ၅ ၅ ၅ ၅ ၅ ၅ ၅ ၅ ၆ ၆ ၅ ၅ ၅ ၅ ၅ ၅ ၅ ၅ ၆ ၆ ၅ ၅ ၆ ၆ ၅ ၅ ၆ ၆

per08120040a	JLW	8/12/04 20:46	356966	118884	1 ACTL	use
per08120041a	JLW	8/12/04 20:53	356966	118884	1 ACTL	use
per08120042a	JLW	8/12/04 21:00	356966	118884	1 ACTL	use
per08120043a	JLW	8/12/04 21:07	356966	118884	1 ACTL	use
per08120044a	JLW	8/12/04 21:14	356966	118884	1 ACTL	use
per08120045a	JLW	8/12/04 21:21	356966	118884	1 ACTL	use
per08120046a	JLW	8/12/04 21:28	356966	118884	1 ACTL	use
per08120047a	JLW	8/12/04 21:35	356966	118884	1 ACTL	duse-r 10x on 8/13/4
per08120048a	JLW	8/12/04 21:42	356966	118884	1 ACTL	duse-r due to carryover-r 8/13/4
per08120049a	JLW	8/12/04 21:49	356966	118884	1 ACTL	use
per08120050a	WCLCCV	8/12/04 21:56			1	passes
per08120051a	IPB006	8/12/04 22:03			1	
per08120052a	WCLCRI	8/12/04 22:10			1	passes
per08120053a	WCLCRI	8/12/04 22:17	356966	118884	1 ACTL	duse-r on 8/13/4
per08120054a	WCLCRI	8/12/04 22:24	357321	118947	1 ACTL	duse-r on 8/13/4
per08120055a	WCLCRI	8/12/04 22:31	357321	118947	1 ACTL	duse-r on 8/13/4
per08120056a	WCLCRI	8/12/04 22:38	357321	118947	1 ACTL	duse-r on 8/13/4
per08120057a	WCLCRI	8/12/04 22:45	357321	118947	1 ACTL	duse-r on 8/13/4
per08120058a	WCLCRI	8/12/04 22:52	357321	118947	1 ACTL	duse-r on 8/13/4
per08120059a	WCLCRI	8/12/04 22:59	357321	118947	1 ACTL	duse-r on 8/13/4
per08120060a	WCLCRI	8/12/04 23:06	357321	118947	1 ACTL	duse-r on 8/13/4
per08120061a	WCLCRI	8/12/04 23:13	357321	118947	1 ACTL	duse-r on 8/13/4
per08120062a	WCLCRI	8/12/04 23:20	357321	118947	1 ACTL	duse-r on 8/13/4
per08120063a	WCLCCV	8/12/04 23:27			1	fails
per08120064a	IPB007	8/12/04 23:34			1	
per08120065a	WCLCRI	8/12/04 23:41			1	fails
per08120066a	WCLCRI	8/12/04 23:48	357321	118947	1 ACTL	duse-r on 8/13/4
per08120067a	WCLCRI	8/12/04 23:55	357321	118947	1 ACTL	duse-r on 8/13/4
per08120068a	WCLCCV	8/13/04 0:02			1	fails
per08120069a	IPB008	8/13/04 0:09			1	
per08120070a	WCLCRI	8/13/04 0:16			1	fails

GEL ORGANIC RUN LOG

Date: 8/13/4
 Extr. Injection Volume: 50uL
 Sequence Number: 081304pera
 Initial Calibration Date(s): 8/13/4

INSTRUMENT ID: LCMSMS

Method: 8321A MODIFIED
 Int. Std. UCL040524-01.2
 Mobile Phase Lot#: 225215, 234631
 Standard-Samp Reagent Lot#: 225215

Reviewed BY: *[Signature]*
 Date: 8/13/14
 SOP: GL-OA-E-056Rev.6
 Alt Check Std. ID: WCL040803-06

DataFile	Sample	Analyst	Injection Date	Batch	SDG	Dilution	Client	Comments	QC_Flag
per08130001a	IPB001	JLW	8/13/04 8:10				1		B
per08130002a	IPB001	JLW	8/13/04 8:19				1		B
per08130003a	WCLICAL-01	JLW	8/13/04 8:26				1		I
per08130004a	WCLICAL-02	JLW	8/13/04 8:33				1		I
per08130005a	WCLICAL-03	JLW	8/13/04 8:40				1		I
per08130006a	WCLICAL-04	JLW	8/13/04 8:47				1		I
per08130007a	WCLICAL-05	JLW	8/13/04 8:54				1		I
per08130008a	WCLICV	JLW	8/13/04 9:01				1	passes	C
per08130009a	IPB002	JLW	8/13/04 9:08				1		C
per08130010a	WCLCRI	JLW	8/13/04 9:15				1	passes	C
per08130011a	118248005	JLW	8/13/04 9:22	354989	118248		1	use	S
per08130012a	118248006	JLW	8/13/04 9:32	354989	118248		1	use	S
per08130013a	118248007	JLW	8/13/04 9:39	354989	118248		1	use	S
per08130014a	118248008	JLW	8/13/04 9:46	354989	118248		1	use	S
per08130015a	117982006	JLW	8/13/04 9:53	354989	117982		1	duse-ratio off rr file 24a	S
per08130016a	1200677361	JLW	8/13/04 10:02	354989	117982		1	use	S
per08130017a	1200677363	JLW	8/13/04 10:09	354989	117982		1	use	S
per08130018a	117982007	JLW	8/13/04 10:16	354989	117982		1	use	S
per08130019a	117982008	JLW	8/13/04 10:23	354989	117982		200 BATL	use	S
per08130020a	117982009	JLW	8/13/04 10:35	354989	117982		20 BATL	use	S
per08130021a	WCLCCV	JLW	8/13/04 10:45				1	passes	C
per08130022a	IPB004	JLW	8/13/04 10:52				1		B
per08130023a	WCLCRI	JLW	8/13/04 10:59				1		C
per08130024a	117982006	JLW	8/13/04 11:06	354989	117982		1	use	S
per08130025a	117982010	JLW	8/13/04 11:15	354989	117982		1	use	S
per08130026a	118884003	JLW	8/13/04 11:22	356966	118884		10 ACTL	use	S
per08130027a	118884004	JLW	8/13/04 11:29	356966	118884		1	use	S
per08130028a	118884006	JLW	8/13/04 11:36	356966	118884		1	use	S
per08130029a	WCLCCV	JLW	8/13/04 11:43				1		C
per08130030a	IPB004	JLW	8/13/04 11:53				1		B
per08130031a	WCLCRI	JLW	8/13/04 12:00				1		C
per08130032a	1200682861	JLW	8/13/04 12:41	357321	118947		1	duse-rr file 44a	S
per08130033a	1200682857	JLW	8/13/04 12:51	357321	118947		1	use	S
per08130034a	1200682860	JLW	8/13/04 12:58	357321	118947		1	use	S
per08130035a	118947001	JLW	8/13/04 13:05	357321	118947		1	use	S
per08130036a	1200682858	JLW	8/13/04 13:12	357321	118947		1	use	S
per08130037a	1200682859	JLW	8/13/04 13:19	357321	118947		1	use	S
per08130038a	118947002	JLW	8/13/04 13:26	357321	118947		1	use	S
per08130039a	118947003	JLW	8/13/04 13:33	357321	118947		1	use	S

per08130040a	118947004	JLW	8/13/04 13:40	357321	118947	1 ACTL	use	S
per08130041a	WCLCCV	JLW	8/13/04 13:47			1	passes	C
per08130042a	IPB005	JLW	8/13/04 13:57			1		B
per08130043a	WCLCRI	JLW	8/13/04 14:04			1	passes	C
per08130044a	1200682861	JLW	8/13/04 14:11	357321	118947	1 ACTL	use	S
per08130045a	118947005	JLW	8/13/04 14:20	357321	118947	1 ACTL	use	S
per08130046a	118947006	JLW	8/13/04 14:27	357321	118947	1 ACTL	use	S
per08130047a	WCLCCV	JLW	8/13/04 14:34			1	passes	C
per08130048a	IPB006	JLW	8/13/04 14:44			1		B
per08130049a	WCLCRI	JLW	8/13/04 14:51			1	passes	C